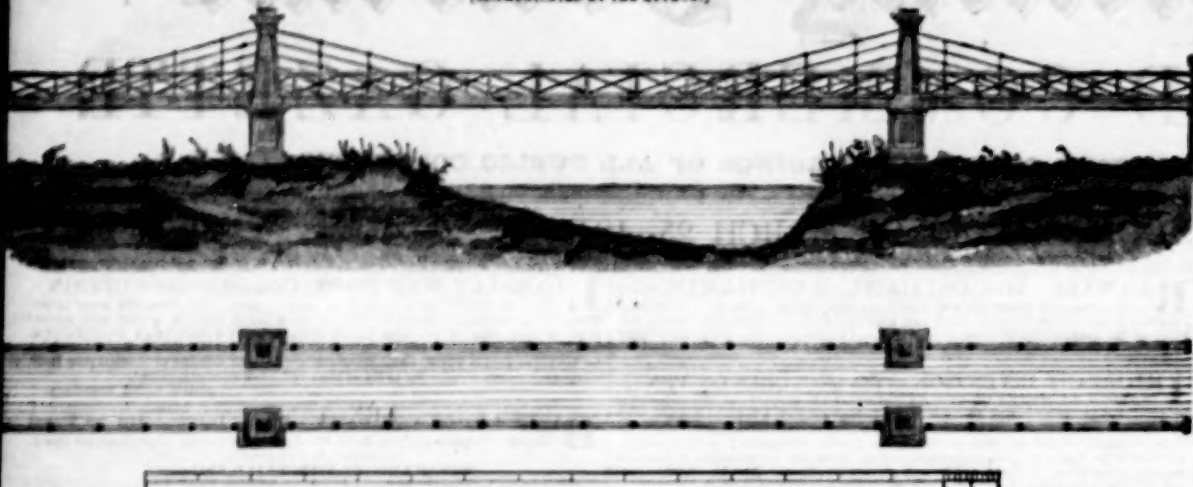


FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[PRICE 6D.]

DESCRIPTION OF AN ENTIRELY NEW SUSPENSION BRIDGE.

DESIGNED BY, AND EXECUTED UNDER THE SUPERINTENDENCE OF, THOMAS MOTLEY, CIVIL ENGINEER, BRISTOL.
[COMMUNICATED BY THE AUTHOR.]



THAMES TUNNEL—HISTORICAL NOTICE.

As the opening of this interesting work to foot passengers takes place this day, and as it has now reached completion for all the purposes for which it was intended, with the exception of the land approaches to the carriage-roads, which can be accomplished without fear of accident, a history of its progress from the commencement may not be unacceptable to our readers. Several attempts had been made to carry a tunnel under the Thames previous to the proposal of Mr. (now Sir Isaac) Brunel about the year 1825, but they were only driftways or mere drains compared with this, and we believe there is at Gravesend still part of one in existence a considerable way under the river, though the entrance is closed. All these attempts, however, failed, and it was left to the matured ideas, and engineering skill, of Sir Isaac Brunel, to establish the principle that a thoroughfare for carriages and foot passengers is practicable under deep and tidal rivers, and without interruption in the navigation of such rivers, and to establish for himself an everlasting monument beneath the waters of the Thames, to carry his name and talents to posterity, holding him up as a credit to his native country—France, to England, his adopted one, and a benefactor to engineering science. In 1825, the shares were liberally subscribed for, and in 1826 the work commenced, by the erection of an enormous brick cylinder, forty-two feet high, fifty feet in diameter, and three feet thick, at the distance of 150 feet from the wharf; the excavation for the perpendicular shaft was then proceeded with, the cylinder being gradually sunk till it reached the necessary depth, the horizontal excavation, or tunnel, was then commenced, and proceeded until the year 1828. On the 14th of January in this year, the second eruption of the river took place in front of the shield, which completely inundated the tunnel with mud, seriously injured the shield; and, the capital of the company having become exhausted, the undertaking now appeared surrounded with irretrievable difficulties, if not involved in certain ruin. Still the greatest interest was excited, and numerous were the speculations as to the probability of its completion, also, truths of those who professed to know anything about it, giving it up for lost. A public meeting was held, at which H. R. H. the Duke of Cambridge and the Duke of Wellington attended, and resolutions were carried in favour of raising fresh capital, by loans on debentures, but nothing effectual was done, and the works remained untouched until 1835, a period of seven years. In this year, under the sanction of an Act of Parliament, the Lords of the Treasury allowed the Exchequer Loan Commissioners to advance out of the money voted for public works the amount estimated as necessary to complete the tunnel. The mind of the engineer had, however, not been idle during this period, and on being thus provided with the means of war, he, in 1836, after a cessation of eight years, once more boldly attacked the enemy, armed, with a new shield of sufficient power, not only to withstand any serious influx of water from the quicksands, but any hydraulic pressure, which, under the circumstances, it could be subjected to—it was a masterpiece of ingenuity, and executed in the best manner by Messrs. Hancock. Having sunk in the Thames, over the office, an immense quantity of soil, and taken every precaution for the safety of the men, he succeeded in submerging in clearing out the mud, &c., removing the old, and fitting the new shield, which answered the most sanguine expectations of the engineer. During the further period of eight years, he has had numerous difficulties to contend with, inseparable from the work, and against which it was impossible to be prepared, and among these, on three occasions, was the complete swamping of the work from irruption through the silty soil. Satisfied, however, of his capability for the ultimate completion of his daring object, he never despaired, never flinched, he viewed temporary defeats as but teaching him to conquer, and by indomitable courage, after sixteen years of hard, mental, and bodily labour, he has succeeded and produced a work beneath the waters of the earth, which shall vie with that unmatched specimen of Titian's genius, which proudly floats in mid air, over the Straits of Messina. Perhaps no public work ever caused so much interest and speculation as to its accomplishment, as the Thames Tunnel, and among foreigners of all nations, amazement was particularly excited, at the bare idea of a roadway under the Thames. In this country of mines, the mere idea of a tunnel would create no surprise, had the soil been solid chalk or clay, but here the strata were of the very worst kind, great part of the ground was formed of sedimentary deposit, and the shield was often driven through silt and quicksand, which were forced through the smallest apertures, and at such times the iron over head, little more than an inch in thickness, was the only division between the tunnel and the Thames. The work, however, is now complete, and we sincerely hope that the new communication thus opened between the Surrey and Kent, and the Middlesex and Essex shores, will become sufficiently attractive to pay the shareholders for the patience with which they have awaited the result. The total cost of the tunnel and foot passengers' descents, has been £45,000, or only about one-fifth of London bridge and its approaches. The excavation made for the tunnel was 38 ft. broad, and 22 ft. 6 in. high, presenting a sectional area of 850 sq. ft.; the interior horizontal diameter of each arch is 13 ft. 9 in., and 13 ft. 4 in. vertical; depth at the shaft on the North side 63 ft. 6 in., and declining towards the centre of the river 2 ft. 3 in. per 100 ft.; the base in the deepest part being 76 ft. below high water mark; the length is 1000 ft.

CAUTION TO MINERS.—A few days since, as Thomas Nicholas, a miner, was at work at Levant Mine, he accidentally holed into a part of the mine that was not at work at the time, and fell apparently dead from breathing the foul air. His comrades went immediately and fetched seven more men to his assistance, who, as soon as they entered the place, all fell in the same manner, and lay for some minutes. Power air, however, soon followed, when the poor fellows revived, and are now able to return to their labour.

CARMARTHEN TUNNELLING.—We are informed, upon good authority, that these works are now taken by the Messrs. Waynes, of Gledif, near Aberdare, Glamorganshire, and that they are expected here in the course of a few days, to commence operations. The iron, and other materials belonging to H. R. Dismas, Esq., at the Carmarthenshire Tunnelling, are now being shipped off to Cardiff, and the old iron shafts at that place will be put in full work forthwith. We heartily wish success to both undertakings; and we understand the inhabitants of the latter place are highly delighted at the prospect of their old-established works being resumed under the able management of Mr. Dismas.—*Carmarthenshire Journal.*

MINING—VALUABLE DISCOVERY OF LEAD.—In our publication of Thursday last, we noticed the discovery, in the preceding week, of an exceedingly rich vein of lead ore, on the property of Henry Lytton, Esq., and of another still more rich on the adjoining estate of Penarth, the property of Earl Tankerville and John A. Lloyd, Esq. It is an extraordinary fact, that in the same week—viz., on Friday, the 10th inst.—the miners of Mr. Carty struck upon a bed of lead of the richest description, in the workings of that gentleman, in the Vale of Clowech, on the estate of our townsman, Mr. John Bird, of Merionethshire. The workmen of Mr. Carty have already discovered this vein to be upwards of nine feet in thickness, without any appearance of their immediately cutting through it. This affords another pleasing prospect of ample employment for the working classes, as it will, doubtless, be carried out to the almost by Mr. Bird's spirited and enterprising liberality. Mr. Carty, who not only will receive the principal benefits of his good luck in the development of the hidden treasures of his property, but also the good wishes of the neighbouring population, for affording them the certainty of employment, and by means of his own working into productivity that which has hitherto been working but a barren waste. Mr. Carty also richly merits the success he has met with in this his most arduous and expensive undertaking, in which he has laboured single-handed, and without assistance from any individual, and we are happy to learn that, in addition to the vein of lead on which he has now struck, he has, by his own skill, spirit, and determination, worked to a state of productivity a slate quarry, the produce of which, as, in some, inferior to that of the best and finest texture and quality is, so particularly.—*Merionethshire Advertiser.*

REVIEWS.

Turning and Mechanical Manipulation, &c. By CHARLES HOLTZAPFEL, A. I. C. E. Vol. I. Illustrated by 300 woodcuts. Published for the Author. 8vo., pp. 458. 1843.

It is now some weeks since this elaborate and valuable volume issued from the press; and though we have not directed attention to its contents before, it is to be attributed to the desire on our part, not only to do justice to the author, but to introduce our notice at a period when the novelty of its publication—which, at the moment of its first issue, was such as to attract the general attention of the press—should, in a degree, have subsided; and that we might present a more perfect notice than such as might be expected from a hasty review of the work. We say thus much by way of apology to the talented author, while a recapitulation alone of its contents will at once secure to it, on the part of our readers, a general desire to avail themselves of the valuable information contained in its pages.

The volume under review, although forming one of a series, may be said to be complete in itself; and here we must needs refer to the "Table of Contents," which will best convey the objects of the writer, reserving to ourselves making such observations and extracts as seem meet. The absence of any work treating on turning and mechanical manipulation induced the author to compile the present volume, with the object, as we are modestly told, of "guiding the amateur" in these pursuits, the greatest difficulty which he has had to encounter in his task being that of selection and arrangement, so as to produce, from materials so numerous and dissimilar, a work of general reference and practical instruction, which, it is pleasing to find, he has successfully overcome.

The present volume is devoted to the subjects which form the title, being treated in language at once clear and concise. Referring, then, to the contents, we find that the matter is embraced under three distinct divisions—being, the description of materials from the vegetable, animal, and mineral kingdoms; their uses in the mechanical arts, their structural differences, and physical characters; to which are added the modes of working the several materials, with a practical description of a variety of processes to which they are subjected. We are told, in the introductory chapter, that the practice of the art of turning constitutes the basis of the work, whilst the various mechanical arts associated with it, or derived directly from it, form collateral branches of comment and inquiry. On looking through the work itself, however, we find that other subjects, of equal, if not higher, importance, are embraced, and to which our attention is more immediately directed—as, for instance, taking the third division, treating on minerals and metals: we here find nearly 300 pages, with illustrations, devoted to the consideration of this subject alone, in which are included, not only the mineral in its crude state, but the mode of reduction, the applicability and usefulness of the metals so produced, the forging, hardening, and tempering of iron and steel; the metals and alloys most commonly used, with their characters, depicting their hardness, fracture, malleability, ductility, and strength; to which is appended a description of furnaces, and the modes adopted in the melting and mixing the metals, and the ordinary processes which are subsequently employed in rendering them available to the useful arts. This portion of the work alone merits the attention of the scientific and practical reader, as we believe this to be the only practical work directed to a subject of so important a nature. The chapter (xii., p. 264) devoted to a description of the physical character and uses of the metals and alloys commonly employed in the mechanical and useful arts, with the tables of the cohesive force of solid bodies, the properties of metals, and the following chapters, will be perused with interest and with much advantage, more especially to the student.

In speaking of the mechanical arts, but more particularly the application of the lathe, Mr. Holtzapffel observes—"Nor, amongst our obligations to the mechanical arts, is that the least, which is afforded by them in the cause of science, the delicate apparatus for pursuing which is due to the skill of the mechanic, whose instruments enable us to discover, and likewise to measure, the planetary orbs, or to inspect in the cabinet the wonderful particles of the world we inhabit, and by means of which we find our earth to be forming with creation, exquisite in symmetry, and beautifully adapted to the purposes of organic life; indeed, in whatever direction, and with whatever purpose, the man of science may look, prospects of similar grandeur and of equal wonder still open in endless succession to repay the labour of research; an effort wherein the instruments (due, in a great measure, to the turner's skill) are only secondary in importance to man's own mental faculties." Such is the simple, and, we might add, beautiful language in which our author conveys himself, when treating on the subject generally, while his more minute inquiries and illustrations are equally conclusive, partaking, as they do, of a more scientific and practical character.

It was our intention to have made some extracts in our present number; but as we find that we cannot devote sufficient space to do justice to the merits of the work, we shall conclude our present notice (with the intention of again early recurring to the subject) with a brief sketch of the contents promised in the following volumes, merely repeating here that each volume will be complete in itself, although the first and second volumes may be considered to be so intimately blended, as to accompany each other, distinct from the remaining three, and which will, therefore, have an index in common, so as to constitute a general and preliminary work, the addition to which of one of the other volumes will render the subject complete for each of the several classes of amateurs to whom the work is more immediately addressed—as it will be observed that the practical division of the subject of turning is separated into three distinct parts, preceded by two general, or preliminary, volumes, the first of which is now under review; the second, as we are informed, being in a state of forwardness. The present volume, as we have already described, is devoted to materials, their differences, choice, and preparation, and the various modes of working them, generally, without cutting tools. The second volume will include the principles of construction and purposes of cutting-tools, abrasive and miscellaneous processes; while the three last volumes will be divided into—1. The principles and practice of hand, or simple, turning; 2. Ornamental, or complex, turning; and 3. Amateur engineering.

We shall, in an early number, again revert to the work, which has so much interested us in its perusal; and endeavour to give a more detailed review of its contents.

EASTERN COUNTIES RAILWAY.—At length all the difficulties that have attended the formation of this line, so far as it has been at present constructed, have been overcome; and, as will be seen on reference to an advertisement in another column, its opening, from London to Colchester, for the accommodation of the public, is fixed to take place on Wednesday next. From what we have seen of the works, and from the satisfactory reports of Colonel Pasley and other scientific men, we have no doubt that time will prove the utmost credit to be due to the indefatigable engineer, Mr. Braithwaite, for the perseverance and skill displayed by him in the construction of works that will, it is to be hoped, long remain, as the most convincing proof of his ability, and also of the sound discretion exercised in the anticipations held out to the shareholders as to probable returns for the outlay of their capital. In the advertisement alluded to will be found the times of starting from the various stations, and the time occupied in the different journeys; and, we have no doubt, from the populous districts through which the line traverses, that success will attend the working of the line which the exertions of the manager and directors, through civil report and good report, so well deserve.

AERIAL STEAM NAVIGATION.—The first Parliamentary step respecting the company for this novel mode of transit was taken last night, in the House of Commons, when Mr. Knatchbull introduced the "Aerial Transit Bill," which was read a first time, and ordered to be read a second. We understand the hon. Member for Bath was greeted with the loudest laughter in bringing in the bill.

THE "SHANDON" STEAMER—NO SMOKE.—We have much pleasure in being able again to lay before the public the great advantages that is gained by the application and working of Mr. C. W. Williams's patent argand furnaces, as applied on board the Shandon steam-tug, by Mr. William Butler, engineer. On Saturday last, a number of gentlemen took a trip from Glasgow to Greenock, on board the Shandon, Captain McLean, in order to satisfy themselves as to the comfort and economy produced by the working of the patent apparatus. Every one on board was highly pleased to see that abundance of steam was generated, and without smoke. When the furnace had worked for about one hour without smoke, the application of the air to the gases was discontinued, and immediately a tremendous quantity of smoke issued from the top of the chimney. The air was again admitted, and in five seconds the smoke totally disappeared. This was tried twice, and the same beautiful effect was the result. Among the gentlemen on board, we observed Mr. J. Aitken, Mr. W. Lamberton, Mr. Buchanan, Mr. May (of the Calcutta Canal), Capt. McKellar, Mr. S. Kerr, Mr. W. Neilson, Mr. H. Dyer, Mr. Butler, Mr. McNaught, and others, all of whom were satisfied with the working of the patent apparatus, which far exceeded their most sanguine expectations. On the vessel's return to Glasgow, the passengers and crew were weighed, and there was found to be a very considerable saving of fuel. We do not hesitate to affirm, that not only the proprietors of steam-boats, but the public in general, would be greatly benefited by applying Mr. C. W. Williams's patent apparatus to their furnaces, in kind as well as marine boilers; and we consider it our duty to give the above facts as much publicity as lies in our power, knowing that the public will benefit immensely thereby. The Shandon made the voyage to Greenock, with a strong tide against her, in two hours and five minutes.—*Glasgow Constitution.*

RYE AND HASTINGS RAILWAY.—A subscription is now in progress for the purpose of defraying the expenses attending upon making a new, cutting, and extension of a branch railway from Rye to Hastings. The more already mentioned, tend to the conjecture that an engine will soon be in requisition; and when once this service is actively in operation, we have no fear for the result.—*Globe Chronicle.*

LEAD MINE IN SOUTH AUSTRALIA.—A lead mine is being worked in South Australia, the ore of which is galena, containing 24 oz. of silver per ton.

The bridge of which the above is a representation was erected in 1837, over the river Avon, at Tiverton, near Bath, and is the first of the kind ever constructed. The span of the middle compartment is 130 feet, from centre to centre of the piers, the land ends are about 55 feet each, making the whole length of the bridge 340 feet. The road way is 14 feet wide between the suspending bars. The four piers are placed each pair on a concrete foundation, 12 feet by 22 feet, 16 feet deep on one side and 9 feet on the other side; the concrete rests on a firm stratum of clay. The piers are each composed of six courses of Bath stone, 2 feet 6 inches deep, containing two blocks in each course. Their dimensions are—base, 4 feet 6 inches by 4 feet 6 inches; top, 3 feet by 2 feet 6 inches. They are covered with a capping, as shown in the drawing. At the base of each pier, level with the lower part of the beam of the bridge, is a large cast-iron bell, secured by holding-down bolts inserted into other cast-iron plates in the foundation. In the centre of the large plate is inserted an iron bar, 3 inches by 1 inch, which passes up the centre of the pier to a cast-iron plate at the top, to which it is firmly secured. The suspending bars are 3 feet 6 inches apart, and the space between their points of attachment to the bridge about 9 feet 3 inches. The substance of these bars averages full 3 inches by 1 inch; they are welded in entire lengths, and connected on each side of the pier by two bars, a brace by half an inch, passing through the pier, bent in the direction of the strain, and fastened to the suspending bars by girths and keys. On each side of the pier is inserted a cast-iron plate, from the base to the top suspending bar, cast with holes, through which these connecting bars pass. The beam is composed of two bars of wrought-iron, 7 inches wide by 3 thick, in lengths of about 18 feet, each properly arranged on as to break the joints, and are connected by brace plates. At the edge of each suspending bar which connects with the beam of the bridge is welded an upright piece of iron, about a foot long, of the same substance as the upright supports, 1 1/2 by 1 inch, and to this the upright supports are attached by coupling joints. In the uprights are made proper eyes, through which the suspending bars pass, and are made tight by a wedge in the eyes above and below the bar, and covered over with a cast-iron rosette. Each suspending bar is attached to a round iron bolt, 2 inches diameter, which passes transversely to connect the two ribs, or beams. At the land abutment the rib, or beam, is secured to cast-iron chairs, held down by strong iron bolts, and firmly secured to cast-iron plates, inserted in the foundation. The diagonal railing on each side of the bridge is filled in with upright round bars of iron, 1 inch diameter, about 8 inches apart—which are omitted in the drawing, to prevent a confusion of lines. The weight of wrought-iron in the suspending and upright bars is about 7 tons; the whole weight of wrought-iron, including transverse bolts, beams (or ribs), foundation plate bolts, railing, &c., about 18 tons; and of cast-iron about 3 tons. The floor is composed of Memel joists and oak plating. The joists are 12 inches deep by 3 1/2 inches thick, bevelled off on the top from the centre to 10 inches at the ends; the flooring boards are about 9 inches wide and 3 inches thick, and are covered with a thick coating of coal-tar and sand, on which is laid screened gravel, of an average thickness, in a convex form, to allow the water to run to the sides of the bridge.

The following was the mode of construction adopted.—The land ends of the bridge were first erected; the middle portion, over the towing path and river, was constructed by means of a platform, or hanging scaffold, suspended horizontally, by means of ropes and pulleys, from the top of the pier. This platform was chained to the iron work, as it extended out, so that the bridge was carried over the river without any support from beneath.

The foregoing description will, it is presumed, be sufficient to enable those who are acquainted practically with iron to form a tolerable idea of the principles on which the bridge is built, and its effect. It may, however, be observed, that the principle is that of the inverted bracket, converting the force of compression into that of tension, and at the same time preserving as much compression as circumstances will permit, or as may be deemed requisite. It must be evident to the most superficial observer that this mode of construction and arrangement must be less brittle than a chain, and practice has proved that for stability it is unquestionably superior to suspensions with curved chains, and, therefore, will call next to cast-iron. Loads of timber, of from six to eight tons, have passed over this bridge without producing any visible change in the floor; indeed, none can be made without either breaking or elongating the bars, except on far as the natural elasticity of wrought-iron will allow. The power of the above bridge may be nearly ascertained by breaking it as a lever, which is, unquestionably, the law by which all bridges are governed. Thus the first suspending bar descends to the bridge at 3 feet 6 inches from the base of the pier, and extends on the floor nearly 10 feet, which is four times the height, and consequently one ton at the end would produce a strain of four tons at the pier, and so on in the proportion with each of the upper bars. Now there are 34 suspending bars, averaging a section of full 3 inches to each bar, which make 48 inches; then, supposing one inch of best cable iron to bear a strain of 30 tons previous to separating (though it would begin to stretch with half that strain), 48 inches would support a direct or perpendicular strain of 540 tons; but the average being 4 to 1, they would only support a uniform load of 135 tons, the weight of the materials included. Thus, if the proportion of the material was increased, say 10 to 1, it is presumed that this kind of bridge would be well adapted for railway purposes, even with such ponderous engines as are used on the Great Western Railway.

The cost of the above bridge, including the expense of masonry and very deep foundations, exclusive of embankments and approaches, was under £5000, and was covered within 5 per cent. of the estimate. Provided only that it is duly painted, it is presumed that the iron work will endure even for centuries without requiring repairs of any consequence, as may be fairly expected, from its indestructible nature, and the almost entire absence of friction. It may be further observed that the joints, which are about 31 inches apart, and each projecting 3 inches, are coated about 3 inches down on the double iron beam, in which projection they are securely fixed by iron bolts with cross heads, so as to clip the lower edge of the beam, thus performing the office of cramps; and the beams being well laid, longitudinally, produce all the effects of horizontal diagonal bracing, and, therefore, an diagonal bracing in wood, and hence the absence of an oscillating motion.

REMARKS.—It is right to some extent as to the question of the present state of the Tiverton bridge, which I assisted in the erection of, about six years ago, I beg to state, with the exception of an unimportant defect, produced by a slight sinking of the masonry on one side, it is in as perfect and sound a condition as when first erected, and, I have no doubt, will continue to be so for many years, without requiring any repair, except occasionally painting. As regards the question, generally, of the principle of construction, I have no hesitation in stating that, under general circumstances, it is especially suited to the best proportioned suspension bridge with curved chains, and may be applied to them in any degree, and the amount of its construction, may be varied according to the nature of the case. It has also this great advantage, that the going way, in removing, and use of the bridge, have not been so much interrupted as in the case of those being considerable at present.

THOMAS MOTLEY, CIVIL ENGINEER, BRISTOL.

ABANDONED WORK AT GLENDALE.—The quantity of water ejected by the well of Glendale in twenty-four hours, has just been ascertained to be eighty-seven million gallons. As water is paid for at the rate of one penny the gallon, the above quantity amounts to £87,000 a year, almost double what the working of the well has cost.

SHANDON RAILWAY.—Another Glasgow railroad—that from Margate, to Ramsgate—is to be opened by its full extent on the 11th of July next. This will be of the greatest convenience to those English tourists who choose Ramsgate for their route, on their visits to the continent next summer. The steam-train proceeds from Margate up the Rye to Margate, and the railroad from Margate to Ramsgate, will carry the tourist at once into the midst of all the romantic beauties of the Breckland and the Fens. Margate has been for some time in constant railroad communication.

IRON, HARDWARE, AND METAL TRADES' PENSION SOCIETY.

It is, with much pleasure, we have brought under our notice the formation of a society of the above trades for the purpose of granting permanent pensions to decayed members and their widows, to be supported by donations and annual subscriptions. A carefully arranged series of rules and regulations has been drawn up for the government of the institution. The subscribers list both of life governors, and governors for ten years, as well as annual subscribers, contains some first-rate names both in the metropolis, as well as various parts of the country, and we trust the existence of such a society, which is yet only in embryo, only requires to be known to command the assistance and encouragement of all persons connected with the metal trade. In calling the attention of the affluent and humane to this subject, it will not be necessary to dwell at any length on the benefits to be derived from such an institution, and the extent to which it may be eventually carried; the number of individuals connected, both directly and indirectly, with the metal trade, and, consequently, with the production and manufacture of a large portion of the staple produce of our country, constituting an inconsiderable proportion, and, in some districts, the greater part, of our population. Perhaps, no particular business has experienced so much fluctuation, or continued depression, as the iron trade, during the past twenty years, and this, too, at a period of unprecedented demand for metal for the construction of railroads, &c.; and as, unfortunately, no brighter prospects at present appear, and competition still advances with gigantic strides, many a tradesman who is now able to keep above water, and who may eventually be wrecked on the shoals of speculation or misfortune, will here find a haven which will secure to him for life, at least, its necessities, and many will bless the hour they first joined the institution; while the man of established wealth, who has little to fear from such reverses, will, in giving it his support, have the heartfelt gratification, that he has been thus far instrumental in soothing the declining years of many a son and daughter of misfortune, who have been engaged, perhaps, in the same pursuits with himself, but without the like success.—A general meeting of the friends and well-wishers of the society was held at the London Tavern, Bishopsgate-street, on Friday, the 24th inst., for the purpose of adopting the rules and regulations, appointing officers, receiving subscriptions, &c.,

WILLIAM THOMPSON, Esq., Ald., M.P., in the chair.

In opening the business, the CHAIRMAN expressed the pleasure he felt in complying with the wishes of the meeting, by presiding on that occasion, and sincerely trusted their proceedings that day would lead to the establishment, on a firm and lasting basis, of this infant institution. Every trade had its society for the relief of the indigent and the widow; and, from the extent of the iron trade, it was only just and right that those who have the means should assist in the formation of a fund from which such relief could be drawn. He was happy to see that a considerable sum had already been subscribed—and among the subscribers' names were many of the first respectability. He was sure, by perseverance, this institution might be carried out to a great extent; and he trusted sufficient funds would be subscribed in the course of the year fully to carry out the intentions of the founders. He then described the objects of the meeting, and called upon Mr. Kinnard to propose the first resolution.

Mr. KINNARD felt particularly flattered in being named to propose the first resolution on an occasion, for the foundation of an institution calculated to disseminate the fruits of benevolence and charity to the unfortunate. From the immense extent and connections of the iron trade, he had felt it a sort of disgrace that a society of the kind had not long been established, and it now behoved them to use their utmost exertions, and having commenced the good work, not suffer their institution to remain at the bottom of the tree, but endeavour soon to place it at the top. The subscription already obtained, though not large, showed plainly that much more is to be got. From the high position of their worthy chairman, not only in the iron trade, but as a member of the senate, and supported, as he saw from the respectable meeting round him, the institution would be, he felt convinced it would become worthy of the great interests which they represented. He mentioned an interesting circumstance in his own family; Mrs. K. inquired if ladies were allowed to subscribe, and though she felt much diffidence in putting herself forward on the occasion, she had forwarded two guineas to the institution, which Mr. Kinnard handed to the secretary, and trusted it would quickly be followed by many other ladies. He then moved the first resolution—"That from the extent and increasing importance of the metal trades, and the vicissitudes to which those engaged in them are liable, it is a duty incumbent upon the more prosperous and affluent members of these trades to unite in assisting those who have, in their latter years, fallen into necessitous circumstances."—Mr. SIMPSON, in seconding this resolution, congratulated the trade on the present cheering prospects of having an asylum for the poor and more unfortunate members among them in their declining days. He observed on the vicissitudes young men experienced in the various branches connected with the metal trades, and believed, by exertions, this would become one of the first institutions of the kind.—The resolution was carried unanimously.

Mr. VARDON, in moving the second resolution, wished to say a few words on the obvious duty which the metal trades owed to society, which the resolution pointed out, and which they had hitherto neglected. He considered they were, at least, half a century in arrears in outward avowal of any feeling of benevolence, in comparison with other trades of the metropolis; he would even go further, by saying, they were noted for their severity of action towards their servants and dependants, and not conspicuous for kindly feeling towards those who have toiled in their service through life—he, of course, spoke of them collectively. He was sorry to say, that, while there existed only one society conferring any benefit on members of the trade (viz., "the United Society of Ironmongers"), which was merely a benefit club, there was a Penal Society for the Prosecution of Felons; this was anything but sound policy; they should first encourage virtue, and then punish a wilful departure from it. They had laid up the law in terror to the bad, but had held out no hope of reward to the deserving or unfortunate—on aid to the old and infirm; he called upon them that day to retrieve their error, to amend what had been done amiss, and attain that station amongst the noble institutions of the metropolis which their individual rank and numerical strength entitled them to. He then moved—"That a society be formed for this purpose, to be called 'the Iron, Hardware, and Metal Trades' Pension Society,' the object of which shall be to grant permanent pensions to decayed members and their widows," which was seconded, and carried unanimously.

Mr. TAYLOR (the hon. sec., pro tem.), who had on successfully exerted himself for the formation of this society, was received with much acclamation. He said they had now agreed to form a society, and it was necessary they should have officers. He reminded the meeting of the advantage which must accrue to the society in having at its head a gentleman who stood so high in society as their worthy chairman, and whose name conferred a lustre on every institution founded on good feeling and benevolence. He then moved—"That Wm. Thompson, Esq., Ald., M.P., be requested to accept the office of president," which was seconded, and carried unanimously.—The following gentlemen were then elected vice-presidents:—Edward Curzon, John Gardner, John Gibbons, R. W. Kinnard, Richard Moser, C. Millington, T. B. Simpson, and H. J. Vardon, Esq.—A list of the committee men was then read, and it was explained that one of the regulations enjoined that one-third of their number would be chosen from travellers, shopmen, &c., who belonged to the society, and this was wished to be impressed on the minds of those present, to induce them to join a society, in the management of which they would thus have a share. The list was unanimously adopted.—THOMAS H. SIMPSON, Esq., was then appointed treasurer, who said he feared his time was so taken up that he could only take upon himself the office temporarily, but, as the society was of an important and benevolent nature, it had his warmest support, and, in anything he could possibly advance its interest, he should be at its service.

The meeting having next appointed H. C. Taylor, Esq., of Queen street, City, honorary secretary, that gentleman returned thanks, and said he could not but feel gratified in the manner in which his name had been received; he assured them that he had consulted his own leisure, comfort, or even (he might say) interest, he should not have put himself forward on this occasion, but he felt anxious to redeem the iron trade from the odium attached to its character, and he trusted to see this institution realize their most sanguine expectations; all he asked was the cordial assistance of the members.—The rules and regulations for the government of the institution were then agreed to.—Mr. Fowler, Mr. Dale, and other gentlemen addressed the meeting.—A vote of thanks was passed to Alderman Thompson, who, in reply, warmly expressed his sincere wishes for the success of the undertaking, and the following resolution was passed with acclamation:—"That Mr. Kinnard be requested to convey the warmest thanks of this meeting to Mrs. Kinnard, for her liberal donation and splendid example, from which we feel confident great benefits will accrue to this society."—On the withdrawal of the worthy chairman, Mr. Simpson took the chair to receive subscriptions, and before the meeting broke up, it was understood the entire donations amounted to between £100 and £150, and annual subscriptions to about £100.

NEW STEAM CARRIAGES.—A letter from Copenhagen of the 24th inst., says:—"Steam-carriages, upon a system newly invented by M. Norrby, of Sweden, a hitherto very ingenious mechanician, have been established between this capital and Copenha. They carry thirty passengers, and have spacious stowage above and below the luggage and merchandise. Their engines are of 6 or 8-horse power, and several with one boiler whose engine does not exceed 10 degrees. They travel at the rate of a Danish mile (a little less than two French leagues) in from thirty to forty-five minutes; so that they run to and from Copenhagen, a distance of fourteen Danish miles, in about five hours, while our ordinary diligences, drawn by four horses, take station hours to perform the same distance with only 10 passengers and their luggage."

PROCEEDINGS OF PUBLIC COMPANIES.

REAL DEL MONTE MINING ASSOCIATION.

A general meeting of the holders of loan-notes in this company was held at the offices, Duke-street, Adelphi, on Thursday, the 23d inst., for the purpose of coming to a resolution on the proposition of the directors for capitalising the amount of the debenture bonds. Mr. WRAY in the chair.

The CHAIRMAN said that, in the absence of Sir R. PRICE (who was in the country), the duty devolved on him of presiding on that occasion, and he much regretted that he had not the pleasure of seeing a larger assemblage. (There were about fifty gentlemen present.) It was advisable that their proposition should be supported by a considerable majority of the loan-note holders, as the directors would have to call two further meetings of the shareholders for the purpose of confirming or rescinding any resolutions the meeting might this day come to. He trusted a fair and equitable view would be taken of the plan proposed by the directors, who, he assured the meeting, had deeply considered the just claims of each party, and thought the plan they proposed the only one possible to unite the interests of all, and meet the circumstances of the case; and he believed there would not be much opposition to the plan.—Mr. PHILLIPS (the secretary) then read the plan (which we gave entire in our report of the proceedings at the meeting on the 7th inst.). The debt and interest to the 30th June last amounted to 391,078*l.* 10*s.*; this it is proposed to capitalise, and pay interest at the rate of 4 per cent. per annum, which will amount to 15,460*l.* In the event of profits accruing over that sum, such surplus to be divided—half to the loanholders, as a sinking fund to pay off the debt, and half to the shareholders, as a dividend on shares.

The CHAIRMAN explained that the holders of 50*l.* notes had a priority of claim over the 100*l.* holders; but, as there were but twenty nine 50*l.* notes which were not in the possession of the 100*l.* holders, that it would be but a waste of the time of the meeting to take it up in argument on the subject.

On the CHAIRMAN moving that the proposition be adopted, Mr. HEATH said he objected to the plan in *fact*. He considered the company bankrupt, and that, although somewhat better prospects were in view, he considered the directors had no grounds for offering such a plan to the meeting; they were calculating on more than they would be able to perform; and it was too liberal to the loanholders, while to the shareholders, who had sunk a capital of 1,400,000*l.*, without any return, it was unjust in the extreme. He was willing to meet them on fair and equitable terms, and had a plan to propose, which he would move as an amendment on the original motion.—Mr. Heath's plan was to pay them 5 per cent. (valuing their debentures at 105*l.*) for the principal and accumulated interest—with some other details; but which motion was not seconded.—Another PROPRIETOR spoke against the plan, as leaving too much in favour of the loanholder, and moved, as an amendment on the directors' plan, that the amount of interest to be paid should be 2 instead of 4 per cent., making the annual payment to the loans, before the shareholders could participate, about 8000*l.* per annum.—Mr. TAYLOR was in favour of the proposition of the directors; and though, as a mortgagee, he had a right to the whole, there was some gratitude due to the shareholders, whose capital had saved the concern from ruin; still he thought it a fair offer, and shareholders should be content.—Mr. HEATH felt satisfied there would be great opposition among the shareholders; and there were parties who would, he had no doubt, carry the case before a legal tribunal, if persisted in.

HONORABLE THURIN, Esq., said the best way to avoid the dangers and expenses of a Chancery suit was, for neither party to take extreme views of their fancied rights. It must not be supposed they were bankrupts; they were just now avoiding a state of insolvency, and it was the common wish that both parties should reap the benefits arising from the improved state of the mine. He took a very fair and lucid view of the claims of each party, and considered if the shareholders opposed the offer of the loanholders, it would be something like killing the goose with the golden egg, &c.; while the loan-note holders must give a little on their part, in consideration for the capital invested by the shareholders.—After considerable conversation, the amendment was negatived, only three hands being held up for it; and eventually the original motion was adopted by a large majority.—Thanks having been voted to the chairman, a document was laid on the table for signature, in the shape of an agreement to the several items of the resolution, to be offered to the shareholders, at a meeting to be called by the directors at an early day, for their reception or refusal of the terms thus offered on the part of the debenture bond holders; and it is but justice to observe that the plan proposed is generally spoken of as most equitably arranged, and nicely balancing the just claims and reasonable expectations of both parties.

NORTHERN AND EASTERN RAILWAY COMPANY.

A special general meeting of the shareholders in this company was held at the London Tavern, on Tuesday, the 21st inst., to approve of the bill now before Parliament.—H. G. WARD, Esq., in the chair.—Mr. CROWDER (the solicitor) explained the objects of the bill, which was for the purpose of extending the line from Hockley to Newport, to enable them to raise 152,600*l.* in 12,500 quarter-shares, of 12*l.* 10*s.* each, and to borrow a sum not exceeding one-third of 152,600*l.*, these quarter-shares to bear interest at 6 per cent. for four years, after which time to be at the option of the holders, whether they shall participate in the current dividend, or bear interest at 6 per cent.—Mr. LEVY moved the formal resolution for the approval of the bill, which was seconded, and carried unanimously.—The land for this extension is to be purchased within three years, and the line completed in five years from the passing of the Act.

LANCASTER AND PRESTON JUNCTION RAILWAY.—At the meeting of the shareholders, held on Wednesday, the 18th inst., in the Town Hall, Lancaster (George Burrow, Esq., in the chair), a dividend of 10*s.* on the whole shares, and 10*s.* 6*d.* on the three-quarter shares, was declared, payable on the 21st inst., and the chairman said, in reply to questions from a proprietor, that the reserve fund of 4000*l.* would meet all the liabilities, and that nothing would interfere with the regular payment of the dividends.—Thanks were voted to the chairman and directors, and the meeting broke up.

DEAN FOREST RAILWAY.—A special meeting of the Gloucester Town Council was held on Monday, the 18th inst., for considering the propriety of petitioning Parliament in favour of this bill; the Mayor presided.—It appeared a general opinion, that the proposed railway would confer important advantages on the population of the Forest, Gloucester, and the neighbourhood, by lowering the price of, and, at the same time, increasing the demand for, coal, iron, &c.—The discussion was adjourned to the following Wednesday, when the adoption of the petition in favour of the bill was carried by a majority of 11 to 8.

SOUTH SEA HOUSE.—A quarterly court of proprietors of South Sea Stock was held on Thursday, the 23d inst., at the company's house, in Threadneedle-street, Charles Franks, Esq., the sub-governor, in the chair. The minutes of the last meeting were read and confirmed.—The chairman acquainted the court that the amount of the company's loan debt was 359,386*l.* 2*s.* 6*d.*, Three per Cents.—Mr. Capel moved—"That this court requests the directors to prepare and publish a list of the dividends due on the stock which are accumulated up to the 1st of January, 1852, setting forth the amount due, and the names of the parties to whom they belong," which was, however, after some discussion, withdrawn.—Mr. Jones suggested an alteration in the manner of drawing up the accounts of the company, to which the chairman consented, and said that it should be adopted for the future.—The court then adjourned.

COVENTRY AND WARWICKSHIRE BANKING COMPANY.—The annual meeting of this company was held at the Crown Arms Hotel, Coventry, on Tuesday night, Abraham Herbert, Esq., in the chair.—The report, which was read to the meeting, detailed the amount of losses sustained by the bank under its late manager, which had reduced the capital to 15,000*l.*, with a further sum, not taken into account, of about 7000*l.* for balance of premium; and recommended the meeting not to fill up the vacancies in the directors, whereby the direction would only consist of five persons. The proposition, after a division, was carried, and the sum of 100*l.*, annually was voted to the directors, to insure their constant attendance, or some one of them, of the bank, to continue managing its business.

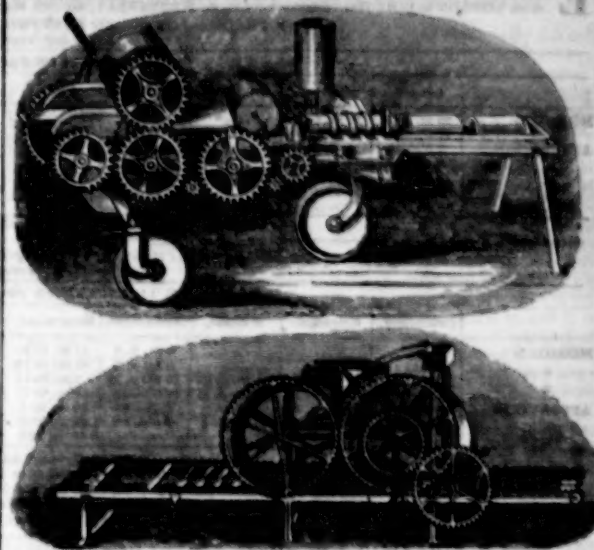
PATENT ROLLING AND COMPRESSING IRON COMPANY.

VICE-CHANCELLOR'S COURT—MARCH 22.

PERCIE HORN AND HAGUE, vs. STUART (with Mr. PATTY) showed cause against dismissing an injunction restraining an action at law which had been brought by the defendant Horn against the plaintiff, who was one of the directors of a company for rolling and compressing iron. For some time after the first formation of the company, a quantity of iron goods was supplied by the defendant Hague; but the company being desirous to admit him as a director, and it being contrary to the usual rule that he should continue to supply goods any longer, it was said to be an understanding that on condition of his taking shares in the company, the iron goods should, in future, be supplied by his friend Mr. Horn. Hague accordingly signed the deed of the company, and became a director in November, 1841. Goods were then supplied by Horn to the amount of 1100*l.*, and the company failing, an action was brought by him against Mr. Percie, one of the directors, for the whole sum. It was now alleged that Horn was a relative, and in the employ of Hague, and that the goods had been supplied from the factory of the latter. The action was, therefore, in truth, on behalf of Hague, and as he was indebted to the company in respect of some of his calls, and also on some other matters, a general account ought to be taken in equity between him and the company.—Mr. BRYNELL (with Mr. WARD), on behalf of the defendant Hague, submitted that the plaintiff could not be permitted to set up the contract with the defendant, and deny it in the same breath; and further, that the relief prayed could not be had in a suit founded, as this was, against a single director.

The VICE-CHANCELLOR suggested that it would be better to proceed to judgment in the action to be dealt with as the court should direct.—The parties consented to the proposition, and on this arrangement the case stood adjourned.

TWEEDDALE PATENT DRAIN TILE AND BRICK COMPANY.



The ingenious invention of the Marquis of Tweeddale for the formation of drain tiles and bricks by machinery, which was matured by his lordship a few years back, and has been extensively brought into use in this country, and more particularly in Scotland, has now become the property of a public company, who have stations in various parts of the kingdom, and large premises at Millbank, Westminster, and offices at 10, Whitehall, for carrying on their business. Several machines for the manufacture of tiles, &c., are before the public, but the advantages claimed by this, are its extreme low price and economy in working—the power of one man being sufficient to manufacture from 500 to 1000 bricks or tiles per hour, requiring only a feeder, and one person to take away: these latter duties might be performed by women or boys. The operations of these machines are simple and perfect; in the tile machine the clay first passes between two horizontal rollers, perfectly flat, and regulated by a screw to any thickness required; between two vertical rollers the sides of the clay are bent downwards, the centre passing over a web, and curved wheel, which gives the interior shape of the tile, it then passes through three moulds in the form of a horse-shoe, gradually diminishing in size, and in front of the last, comes in contact with the cutter, and passes over palette boards a perfect tile of one operation, and ready to be carried away to the drying place. In the brick machine the operation is rather different, the clay, which has been previously tempered, is put into a hopper over horizontal rollers, under which is the mould, the length and width of the brick required, while the cutter beneath can be regulated to form it of any thickness it may be set to; these bricks are made perfectly rectangular, without the depression in the face, as has hitherto been the custom, and which has usually been considered useful as forming a key for the mortar, the most eminent builders and engineers now, however, repudiate this idea, and it is considered that more perfect brickwork can be obtained by these than by the old method, the cementing material, being applied as thin as possible, if good, forming a sufficient joint. These machines are now adapted for carrying on work to any scale. Brick and tile manufacturers, the extensive landowner, and the small farmer, will equally find great advantages from the use of them; they are quite portable, may be moved about as convenience requires, with the greatest facility, and from their simplicity, and the absence of anything like complicated machinery in their construction, they are not likely to get out of order, or to require much repairs; the dues to the company, as patentees, are moderate, and, taking into consideration all the circumstances connected with the invention, it appears likely to be of much benefit to the arts, and the agricultural interest in particular. The accompanying cuts will give a general idea of the operation.

PROCEEDINGS OF SCIENTIFIC BODIES.

INSTITUTION OF CIVIL ENGINEERS.

MARCH 31.—The PRESIDENT in the chair.—After giving, in continuation of the discussion of the last meeting, some very interesting details of the power exerted by horses in performing certain work, the first paper read was a description, by Mr. S. C. Knefl, Graduate, of the furnaces at the Buttery Iron-Works, and the barrows used for filling them. The application of the pointed Egyptian arch to avoid the effects of expansion and contraction by the heat, and the ingenious use of the self-weighting barrow, with its movable bottom to distribute the materials equally in the furnace, were highly approved by the meeting.

The next paper read was the description, by Mr. Oitham, Associate, of the machine invented by Mr. Cotton, the Governor of the Bank of England, for weighing sovereigns, and separating the light ones from those of standard weight. The machine exhibited, was made by Mr. Napier, of the York-road, Lambeth, and was so delicate, that it detected, with precision, a variation of a twelve thousandth part of the weight of a sovereign. The coins are placed in a tube, or hopper, from whence they are carried on to a small platform, which is suspended over a delicately poised beam, to the other end of which is appended the standard mint weight. On setting the machine at work, a sovereign is placed on the platform, and if it is full weight, a small tongue advances, and strikes it off into another till appointed to receive it, but, if it is light, the platform sinks, and brings it within the reach of another tongue, at a lower level, which advances at right angles to the former tongue, and pushes the coin into another till. Other coins succeed in rapid rotation, so that the machine can weigh and sort 10,000 sovereigns in six hours, while an experienced teller can at the utmost only weigh between 3000 or 4000 coins by hand scales in the same time, and even then, the optic nerve, by incessant straining, becomes fatigued, and errors occur. The various ingenious contrivances of the machine can only be appreciated by careful examination, but it was declared to be one of the most satisfactory instances of automatic labour, that had been seen for many years in the walls of the institution, where so many practically useful inventions are brought forward. In the discussion which ensued, great credit was allowed to Mr. Cotton for the ingenuity of his invention, and for the beauty of the workmanship with which Mr. Napier had carried out his intentions.

Mr. Fairbairn, of Manchester, exhibited, and described, a model of a very large wooden mill which he is now constructing entirely of cast-iron on the five-proof principle, for the Sulphur Works, under the superintendence of Mr. Othman Dadiou, of Constantinople, who was present, with several gentlemen from the Turkish Embassy. The building forms three sides of a square, and covers an extent of three acres; the two main beams are 273 feet long, by 40 feet wide, and 360 feet long, by 30 feet wide; the other parts are in proportion. The power employed is water, one wheel of 80-horse, and another of 10-horse power, giving motion to all the shafts and machines necessary for a very extensive wooden factory. Many details of the construction, as of the construction of the building itself, were given, and created much interest in the meeting, which was very numerously attended; indeed, if the members go on increasing as they have done within the last two years, larger premises will be requisite for this institution, which appears to be as flourishing as it is useful.

LONDON ELECTRICAL SOCIETY.

MARCH 31.—A translation by the secretary was read, of "Observations on Discharges," by M. Becquerel. The essentials of these discharges in constant batteries were described; the several materials in common use were named, and the character of each was given. Plaster, free from carbonate of lime, ranks first, it admits of the thickness, which governs the extent of the solution, and, at the same time, does not offer a great resistance to the passage of the current. Among other objections urged against wood, is its tendency to warp; and-board is subject of ferrousness; and-cloth is stated to possess many advantages, and to be an excellent diaphragm, where there is not much resistance. Crochet is as good, from the facility with which they can be obtained; engineer porcelain is excellent.—A translation was then read of the note by M. Stettensen, describing his "Recent Experiments with the Turpentine," which go far towards confirming him in his opinion relative to the parallelism between muscular contraction and electric discharge. He possessed turpentine, and produced contractions in prepared frogs, placed on their backs, by merely touching the dead fish. He exposed the brain of a turpentine, and, on applying poison to the fourth brain, the fish died, giving strong electric discharges. He removed the electric organ, and obtained muscular contractions in frogs every time that he cut a piece with a knife. He concludes that there is not the least analogy between pious, secondary cells, batteries, and the electric organ.—Mr. Walker read a short note of the intention to draw from the great deposits of water on the morning and evening of the 15th, in the vicinity of London, &c. It fell in dense showers from large trees, and the ground beneath them was not only well saturated with water, but it also stood about them in pools. He does not consider that radiation in the soil causes, but that the altered character of the flowing vapour is brought about by the absorption of electricity from the atmosphere, by means of the vegetative points.—Mr. Wier's "Electro-Metallurgical Register" for February was then read.

EASTERN COUNTIES RAILWAY.—Notice is hereby given, that THIS RAILWAY WILL BE OPENED FOR TRAFFIC,

from LONDON to COLCHESTER, on WEDNESDAY, the 29th March inst., on and after which day the Trains will run as follows:—

DOWN TRAINS.—LONDON TO BRENTWOOD, CHELMSFORD, COLCHESTER, &c.,
Every day (except Sundays).

USUAL DEPARTURE FROM, OR ARRIVAL AT.

	London.	Mile-end.	Stratford.	Forest Gate.	Ilford.	Romford.	Brentwood.	Chelmsford.	Witham.	Kelvedon.	Colchester.
MORNING	8.0 a.m.	8.10 a.m.	8.20 a.m.	8.30 a.m.	8.40 a.m.	8.50 a.m.	9.00 a.m.	9.10 a.m.	9.20 a.m.	9.30 a.m.	9.40 a.m.
AFTERNOON	3.0 p.m.	3.10 p.m.	3.20 p.m.	3.30 p.m.	3.40 p.m.	3.50 p.m.	4.00 p.m.	4.10 p.m.	4.20 p.m.	4.30 p.m.	4.40 p.m.

* This train will stop at Stratford on Wednesdays only.

UP TRAINS.—COLCHESTER, CHELMSFORD, BRENTWOOD, &c., TO LONDON.
Every day (except Sundays).

USUAL DEPARTURE FROM, OR ARRIVAL AT.

	Colchester.	Kelvedon.	Witham.	Chelmsford.	Brentwood.	Romford.	Ilford.	Forest Gate.	Stratford.	Mile-end.	London.
MORNING	9.40 a.m.	9.50 a.m.	10.00 a.m.	10.10 a.m.	10.20 a.m.	10.30 a.m.	10.40 a.m.	10.50 a.m.	11.00 a.m.	11.10 a.m.	11.20 a.m.
AFTERNOON	4.40 p.m.	4.50 p.m.	5.00 p.m.	5.10 p.m.	5.20 p.m.	5.30 p.m.	5.40 p.m.	5.50 p.m.	6.00 p.m.	6.10 p.m.	6.20 p.m.

* This train will stop at Stratford and Mile-end on Wednesdays only.

N.B.—Stage coaches meet the Colchester trains to convey passengers to and from Norwich, Yarmouth, Lowestoft, Bungay, Woodbridge, Sudbury, Bury St. Edmunds, Stowmarket, Ipswich, Harwich, and all the other important towns in the Eastern Counties.

SUNDAY TRAINS.—STOPPING AT ALL THE INTERMEDIATE STATIONS.

DOWN TRAINS.

Usual departure from, or arrival at.

	London.	Romford.	Brentwood.	Chelmsford.	Colchester.
MORNING	8.0 a.m.	8.10 a.m.	8.20 a.m.	8.30 a.m.	8.40 a.m.
AFTERNOON	3.0 p.m.	3.10 p.m.	3.20 p.m.	3.30 p.m.	3.40 p.m.

* These trains stop at Brentwood.

UP TRAINS.

Usual departure from, or arrival at.

	Colchester.	Chelmsford.	Brentwood.	Ilford.	London.
MORNING	9.40 a.m.	9.50 a.m.	10.00 a.m.	10.10 a.m.	10.20 a.m.
AFTERNOON	4.40 p.m.	4.50 p.m.	5.00 p.m.	5.10 p.m.	5.20 p.m.

* This train stops at Chelmsford.

ARGUS LIFE ASSURANCE COMPANY.

25, THROUGHMORTON STREET, BANG.

Empowered by special Act of Parliament, 5 & 6 William IV., cap. 75.

THOMAS FARMCOMB, Esq., Alderman, Chairman.

WILLIAM LEAF, Esq., Deputy Chairman.

William Barclay, Esq., Edward Bales, Esq., Thomas Campbell, Esq., James Cliff, Esq., Robert Langley, Esq., Lewis Parnock, Esq.

Right Hon. John Humphrey, Lord Mayor of London, M.P.

Thomas Kelly, Esq., Ald.

Jeremiah Fletcher, Esq., Sheriff of London and Middlesex.

President—Dr. Jeffrey, 3, Finchley square.

Secretary—W. Compton, Esq., 7, Frederick's place, Old Jewry.

Consulting Actuary—Professor Hall, of King's College.

LIFE RATES OF PREMIUMS.

In addition to the substantial capital of £1,000,000, the assured have the security of the company's income of nearly £400,000 per annum, yearly increasing, and an accumulating assurance fund, invested in Government and other available securities, of considerably larger amount than the estimated liabilities of the company.

The rates of premium are reduced to the lowest scale compatible with the safety of the assured and the stability of the company, thereby in effect giving to every policyholder an immediate and certain bonus without risk, in lieu of the desired and frequently delusive prospect of a periodical division of profits.

ANNUAL PREMIUM TO ASSURE £100.

Age.	For One Year.	For Seven Years.	Term of Life.
20	40 17 8	40 10 1	41 11 10
30	1 1 9	1 5 7	2 0 7
40	1 1 9	1 5 9	2 14 10
50	1 14 1	1 10 10	4 0 11
60	2 2 4	2 17 0	8 0 11

One-third of the "whole term" premium may remain unpaid at 5 per cent. comp. int., as a debt upon the policy for life, or may be paid off at any time without notice.

In assurance for advances of money as security for debts, or as a provision for a family, when the least present outlay is desirable, the varied and comprehensive tables of the Argus office will be found to be particularly favourable to the assured. The medical officers attend daily at a quarter past 2 o'clock.

EDWARD BATES, Resident Director.

A liberal commission to solicitors and agents.

BRITANNIA LIFE ASSURANCE COMPANY.

1, PRINCE STREET, BANG, LONDON.

This institution is empowered by special Act of Parliament (4 Vict., cap. 1), and is constituted as to afford the benefits of life assurance, in their fullest extent, to policyholders, and to prevent greater facilities and accommodation than are usually offered by other companies. The devoted superiority of the plan, and its claims to public preference and support, have been proved incontrovertibly, by its extraordinary and unimpeded success.

Assurances may either be effected by parties on their own lives, or by parties interested therein on the lives of others.

The effect of an assurance on a person's own life, is to create, at once, a property in reversion, which can by no other means be realized. Take, for instance, the case of a person at the age of thirty, who, by the payment of 11. 10. 0d. to the Britannia Life Assurance Company, can become at once possessed of a liquidable property amounting to £1000, subject only to the condition of his continuing the same payment quarterly during the remainder of his life—a condition which may be fulfilled by the mere saving of eight shillings weekly in his expenditure. Thus, by the action of a very slight degree of economy—such, indeed, as was scarcely felt as an inconvenience, he may at once realize a capital of £1000, which he can borrow, or dispose of, in any way he may think proper.

Included propositions, and every requisite information as to the mode of effecting assurances, may be obtained at the office.

PETER MURDOCH, Resident Director.

A board of directors attend daily, at two o'clock, for the dispatch of business.

NORTH BRITISH LIFE INSURANCE COMPANY.

A NEW BANK BUILDING, LOTHBURY, and 15, FINE, MALL, BANG.

Incorporated by Royal Charter, with a protecting capital of £1,000,000 fully subscribed, and paid up.

His Grace the Duke of Northumberland, President.

The Most Noble the Marquis of Abercromby, Vice-President.

The Right Honourable the Earl of Shaftesbury, Vice-President.

The Right Honourable the Earl of Camperdown, Vice-President.

The Right Hon. Lord Viscount Melville, &c., Vice-President.

The Right Honourable Lord Douglas, of Douglas, Vice-President.

LONDON BOARD.

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FRANCIS WARDEN, Esq., Vice-Chairman.

Alexander Cockburn, Esq., Robert Campbell, Esq., John Campbell, Esq., William F. Crawford, Esq., John Irvine Glasgow, Esq., Charles Morrison, Esq.

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PARIS AND LYONS RAILWAY.—Capital £2,500,000 fr.

(£1,250,000), in 500 fr. 400 shares. Deposit, £2 per share.

DIRECTORS.

Mons. T. C. C. Delamarre, Director of the Bank of France, Paris—Chairman.

John Alcock, Esq., M.P., 20, Park Lane, London.

Marquis de Batteville, Peer of France, Paris.

The Right Hon. G. A. Dawson, 15, Upper Grosvenor Street, London.

Charles Devaux, Esq., 67, King William Street, London.

Hardman Esler, Esq., Liverpool.

Comte de Gasparin, Peer of France, Paris.

Ross D. Manning, Esq., M.P., London.

John Maistran, Esq., 10, St. Nicholas Lane, Lombard Street, London.

Baron Monnier, Peer of France, Paris.

Mons. Buisson, Deputy for Dijon, Paris.

Matthew Uzzell, Esq., 67, King William Street, London.

With liberty to add to their number.

Bankers in London—Messrs. Messier and Co., Nicholas Lane, Lombard Street; Messrs. Glyn and Co., Lombard Street.

Bankers in Liverpool—Bank of Liverpool.

Bankers in Paris—M. Delamarre Martin Didier.

Standing Counsel—F. H. Goldsmith, Esq., Stone Buildings, Lincoln's Inn.

Engineer—Joseph Locke, Esq.

Solicitor—Francis T. Birkenhead, Esq., 15, Bedford Row, London.

Conformably to the law of the 11th of June last, French railways are to be partly constructed at the expense of the State. The lines are to be leased to, and worked by, private companies.

The Government delivers to the companies, free of all charges, the land required for the whole line, undertakes to complete the earthworks, tunnels, bridges, &c., at its own expense, and builds all the stations and termini.

The companies have to defray only the cost and laying down of the rails on roads constructed and granted at the expense of the State, and to find the engines, carriages, &c., for the working of the lines.

The various expenses which have attended the formation of railways in England—viz., the purchase of the land, and the construction of the works—are thus avoided in France; and the facilities to error, in the calculation of the cost, are brought within very narrow limits.

The French Government will grant a lease of the line for a period of thirty-five to forty years, rent free, at the expiration of which term the Government is to take possession of the railway, and to reimburse to the company the then actual value of the rails, engines, carriages, &c.—to be determined by competent valuers, named on each side.

The advantages of a long line of railway with a large traffic, in diminishing the ratio of expenditure to income, are too well known to require to be dwelt upon.

The line now proposed, from Paris to Lyons, by Dijon and Chalon, will be best appreciated upon reference to a map of France, or of Southern Europe and the Mediterranean. It will be seen to run through the centre of France, and to intersect the best wine districts of Burgundy; upon its course, and in its vicinity, are many important towns, at one end is Paris, at the other Lyons—second only to Paris.

For a distance of more than 400 miles will be carried the large traffic to Germany; and for almost two-thirds of its entire length, the traffic to Switzerland, and the neighbouring districts of Alsace—the Lancashire of France. To the south, beyond Lyons, it will be the medium of communication with many of the southern provinces, and to Marseilles—the port having the greatest extent of trade in France (as proved by the Government returns), and the place of arrival and departure for passengers from and to Italy, Spain, Africa, the Levant, and the East Indies.

The great increase of traffic caused, in England, by the introduction of railways is well known; and the ratio of increase has been still greater in France, on the lines hitherto opened. Upon the great leading thoroughfares in England the coaches travelled at the rate of one mile an hour, while from Paris to Lyons the difference rate does not exceed six. It were, therefore, the great extent of intercourse, under existing disadvantages, is considered, the success of this railway may be predicted with confidence.

Tables of the passenger traffic as it now exists, and the calculations deduced therefrom, are appended to the prospectus.

No augmentation has been assumed on the actually existing traffic, and the inter-continental and auxiliary traffic has not been wholly included; neither has any cost been taken for carrying houses, carriages, or live stock.

The statutes of the company will provide that on change of engineers shall be made without the concurrence of one-half of the French, and two-thirds of the English, directors.

The prospect will have an office in London, where proprietors may obtain information respecting the railway. It is also intended that there should be one English director, of practical experience in railway concerns, resident in Paris.

The capital is fixed for the present at £2,500,000 fr. (£1,250,000), which is deemed adequate, by the engineers, if the company do not take the line beyond Chalon, at which point they will have the option of stopping.

If the company work the whole line to Lyons, further capital will be necessary, and will be raised either by loan or by the creation of new shares, as may be determined by a general meeting, to be called for that purpose.

The directors are empowered to declare the company formed when 100,000 shares shall be subscribed for.

The first deposit is 40 fr. No other call will be made this year, and three months' notice will be given of all future calls.

The paid-up instalments will bear interest at 5 per cent. per annum from the date of promulgation of the law constituting the company until the completion of the works. Pending the passing of the law, the caution money, required by the French Government, will be held in the joint names of Mr. Delamarre, of Paris; Mr. C. Devaux, of London; Mr. John Alcock, of London; Mr. Hardman Esler, of Liverpool; and one other director.

The company will be constituted "Société Anonyme," by royal ordinance, and the liability of each shareholder will be conclusively limited as in the incorporated railway companies of England; to the amount of his shares—not merely as related himself and his co-shareholders, but also on separate third parties. In the case of the Paris and Lyons Railway Company, the original subscribers were held liable, notwithstanding their transfer, to the extent of all per share—but in the present circumstances of the construction of the works of this railway, by the State, it is expected that the French Government will not insist on the liability of the original subscribers to so great an extent; and in no case will that liability, in the event of failure to complete, extend beyond 40 fr. per share.

When the full sum of 40 fr. is paid up, in three instalments, at the option of any shareholder, he shall be entitled to 50 fr. as an English equivalent bill.

In case the company should not be definitively constituted, the deposit money will be repaid to each subscriber, without any deduction whatever. In that case, the subscribers will be answerable for all expenses of investigation, inquiries, reports, &c., such as relate to the obtaining of the bill, and other charges.

The board of directors will settle the precise direction of the line, the terms of the contract, the nature of the charges, or of the right of the Government, as well as the contract with the French Government, and will, if necessary, appoint a committee from their body for that purpose. The ultimate acceptance of the statutes, subject to the changes, and contract with the Government, will not be made without the approval of a majority of the directors resident in England.

The constitution and management of the company will be, in all substantial particulars, similar to those of the Paris and Lyons, and Lyons and Marseilles, Railway Companies; and the advantages reserved to the proprietors will be on a like basis as in those companies.

Further information and prospectus, with full particulars, may be obtained from Messrs. C. Devaux and Co., London; Messrs. John Alcock, 15, Bedford Row, London; Messrs. Hardman Esler, Esq., Liverpool; and Messrs. Delamarre Martin Didier, Paris, to whom, also, applications for shares may be made.

Paris, 15th March 1843.

THE DIRECTORS OF THE PARIS AND LYONS RAILWAY COMPANY.

I, the undersigned, will accept as a subscriber 10 shares in the Paris and Lyons Railway Company, and I hereby undertake to pay the same, or any instalment thereon, when called for, and to pay the deposit, and sign the subscription agreement in support thereof, and to call upon me when called upon to do so.

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Paris, 15th March 1843.

MIDLAND COUNTIES RAILWAY.—The directors are

READY TO RECEIVE SEVENTEEN THOUSAND POUNDS ON SECURITY

of their LOAN NOTES, for three years, at interest after the rate of 4 per cent. per annum, to be paid half yearly.

By order, J. F. BELL, Secretary.

Leicester, March 16.

SHEFFIELD, ASHTON-UNDER-LYNE, & MANCHESTER

RAILWAY.—TENDERS FOR LOANS.—The directors are prepared to GRANT

MORTGAGES, under the powers of

his opinion, "the learned Judge laid down the law incorrectly to the jury," which was calculated to mislead them in the verdict they might pronounce.

In giving judgment, his Lordship observed, that, had the object of the appeal been that of obtaining a new trial, he, for one, should feel strongly of opinion that the verdict ought not to be disturbed, as he considered such to be supported by the evidence; but, when he came to consider a bill of exceptions, he was bound, in common with the other learned lords, to take a different view of the subject, and if an opinion was entertained that the law had been laid down incorrectly, and that the jury had been misled, there was no discretion on the part of their lordships to exercise, and that, under such circumstances, the exception must be allowed.

As regards the first exception he (the LORD CHANCELLOR) was satisfied that the learned Judge did right in refusing to admit the evidence, such course being based on the law of Scotland, and its administration; the eighth and ninth had been fully treated upon in the course of the argument, and which were, ultimately abandoned, the eleventh exception being the only one, which, in the opinion of his Lordship, should be allowed.

LORD BROUGHAM fully agreed with the LORD CHANCELLOR, expressing himself in the following words, and which we take from the notes before us:—"I entirely agree in the view taken, and for the reasons so luminously expressed by my noble and learned friend on the woolsack, that the exceptions, all but the eleventh, were properly disallowed by the court before whom the bill was brought, and that your Lordships should disallow those exceptions here, affirming the judgment below; but I also entirely concur with my noble and learned friend, that we have no choice here but to allow the eleventh exception. This is, as my noble and learned friend has justly remarked, another case than that of an application for a new trial; and other discretion, within other bounds, alone remains to us to exercise."

His Lordship at the close, stated that he had entered upon the subject at more than an ordinary length, from a desire that no doubt might be entertained on the subject, and "also that it might appear in what way the error crept into the very learned and able Judge's directions," to which he had adverted.

LORD CAMPBELL, in expressing his opinion, fully concurred with the noble Lords who had preceded him, being full of opinion, that, with reference to the first exception, "the learned Judge was perfectly justified, and bound at the trial to reject the evidence which was rejected;" the other exceptions, till arriving at the eleventh, the noble Lord observed, turned upon the construction of the patent. In one stage of the proceedings he admitted that he did entertain some doubt on the subject, but, after the construction put upon it by the learned Judges of the Court of Exchequer, sanctioned by the LORD CHANCELLOR, he had arrived at the conclusion, that "the patent must be taken to extend to all machines, of whatever construction, whereby the air is heated intermediately between the blowing apparatus and the blast-furnace," that being so, he considered the learned Judge was perfectly justified in telling the jury that it was unnecessary for them to compare one apparatus with another, because, confessedly, that system was a mode of heating air by an intermediate vessel between the blowing apparatus and the blast-furnace, and, therefore, an infraction of the patent.

On approaching the eleventh exception, on which alone the award of their Lordships was given, as cited in our last, LORD CAMPBELL expressed his deep regret "after all the litigation, and when, very probably, the verdict would have been the same, if the direction had been unexceptionable," that their Lordships were bound to allow it. He had struggled hard against the admission, and was anxious, if possible, to consider that the learned Judge was talking merely of experiments, or, if he was wrong in law, that the direction was immaterial; but after very anxious consideration of the record and the proceedings, he felt that it was impossible to get rid of the exception, on any grounds which presented themselves.

The LORD CHANCELLOR, in his concluding remarks, observed, "that it must not be understood that their Lordships, in pronouncing judgment, gave any decision upon this state of facts—viz., 'if an invention had been formerly used and abandoned many years ago, and the whole thing had been lost sight of.' Such not being then before them, nor raised upon the record, it must not, therefore, be understood that any opinion whatever was given upon that state of things. It was possible that an invention might have existed fifty years ago, and been entirely lost sight of, and not known to the public—what the effect of that state of things might be, it was not necessary then to pronounce upon."—With reference to the latter remark, LORD BROUGHAM observed, that, under such circumstances, it became "like a new discovery."

Feeling the importance of the question, we have thus, at some length, again entered upon the judgment, but its application, in other cases, fully justify us in directing attention to its more prominent features, as it will, doubtless, form matter of reference in any similar case which may come under the consideration of the courts of law or equity.

The construction of railroads on the continent have of late attracted the attention of the capitalist, while the course adopted by the French Chambers is well calculated to encourage investment in these undertakings, from the advantages they hold out, both by the facilities afforded, and the onerous responsibility which devolves on the Government. We are led to consider the position of continental lines of railway, as contrasted with those in this country, from the peculiar feature of their partaking of a national character rather than that of private enterprise, inasmuch that the funds of the State are employed in the purchase of the land, the construction of earth-works, tunnels, and bridges, as also the erection and completion of the necessary buildings and termini—the several companies being only required to lay down rails on the lines so constructed by Government, and to provide the necessary engines, carriages, and other appliances attached to the traffic department. Another peculiar feature is, that, for a stated period (say thirty-five to forty-five years) the company hold the line free from any rent or charge on the outlay incurred by the French Government; in consideration, however, of which, they are required, at the expiration of that time, to deliver up possession of the railway, for the use of the State—subject, however, to the payment of the actual value of the rails, engines, carriages, &c. Under these provisions, it is clear, therefore, that, with a small fund reserved out of the annual profits, the company will possess, at the termination of their lease, a capital correspondent with their outlay—the annual profits derived from the traffic being interest on their advances. That the shareholders in companies so formed, as well as the public, must derive more than the ordinary advantages calculated upon lines of railway communication, must be apparent, from the circumstances of three-fourths of the capital required for the construction and maintenance of the line being advanced by the Government, for which there is no return—save the possession of the line, after a given period, being placed in the hands of the French Government, on the payment of the then actual value of the rails and machinery.

The advantages thus secured are of a national character; for, not only are the shareholders protected from the enormous outlays—which have, in most instances, exceeded the estimates of engineers—but the amount subscribed by them is employed in the purchase of rails, locomotives, and carriages, the cost of which can be easily served at, without the risk attendant on engineering estimates; while the country derives the benefit consequent on increased facility of communication. At the same time, labour is provided

for the unemployed, and encouragement afforded to the arts and manufactures, bringing in closer connexion distant points, and thus tending to the accomplishment of that object, which should ever be the primary consideration of a Government—the welfare and promotion of the interests of the empire at large, but more especially the industrious classes.

We have been induced to enter more fully on the subject than is our wont, from the novelty presented by the prospectus of the Paris and Lyons Railway; and, as this may be assumed as the basis of the law of France (it being the first line projected under the late ordinance promulgated), we propose directing our attention to its main features, which will better illustrate the remarks we have made on the subject, which is one of importance, as forming so striking a contrast to the course pursued by our Government at home—as the working out of the system, if found to be attended with the contemplated advantages, will, doubtless, induce our own Government to adopt the like measures in the Sister Isle. The Paris and Lyons Railway, which runs through the centre of France, forming a main trunk line, will not only pass through many important towns, but will intersect the principal wine districts of Burgundy, affording a mode of transit for the traffic of Germany, Switzerland, and the manufacturing districts of Alsace, which latter may be designated the Lancashire of France; while beyond Lyons a communication will be opened with many of the southern provinces and Marseilles—a port having the greatest extent of trade in France, as proved by the Government returns, the tonnage of that port, in 1841, being 1,113,140 tons, far exceeding the returns made of Havre and Bordeaux for the like period, which, together, amount only to 1,032,774 tons. The length of the line will be about 330 miles, and, when we consider the vast expenditure on lines in this country of one-third the distance—as exemplified in the London and Birmingham (112 miles), 3,922,812*l.*; the Great Western (118 miles), 6,540,623*l.*; and the Manchester and Leeds (50 miles), 3,050,266*l.*—it will be manifest the comparatively insignificant capital required from the shareholders to effect the object in view—that of establishing a line of railway communication between Paris and Lyons—2,500,000*l.* being the capital of the company, although we are led to believe a further sum of 1,000,000*l.* will be required to establish the entire line, to complete which, in this country, if taken in the same ratio as the instances we have enumerated, would be attended with a cost of at least 18,000,000*l.* sterling. Before leaving this part of the subject, it may be well to refer to the relative prices which the shares in the several companies on which so vast an outlay has been made bear in the market, in reference to the capital subscribed.

We find, then, that the shares in the London and Birmingham line, with 100*l.* paid thereon, are worth 212*l.* per share; the Great Western, 65*l.* paid, are quoted 96*l.* per share; Grand Junction, 100*l.* paid, 198*l.*; Liverpool and Manchester, 100*l.* paid, 192*l.*; and yet, on these last-mentioned lines, forming an aggregate length of 377½ miles, with a cost of 16,297,326*l.*, we find the market value at the present moment to be upwards of thirty millions sterling—thus demonstrating, with so great an excess of expenditure, that the investment is one of a highly profitable nature.

To return, however, to the prospectus above referred to, it will be seen that the direction is formed of parties well calculated, from their position in society, and their business habits, to conduct the undertaking to a successful issue. It may here be observed, that interest, at the rate of 3 per cent. per annum, will be allowed on the instalments paid up, which interest will accrue from the deposits made with the French Government, as security for the carrying out the project on the part of the company; thus the interest derivable, until the line shall be completed and come into active operation, will arise from capital invested, and not be abstracted from the capital funds of the company, as in the case of the Southampton Docks, to which we had occasion, in a late Number, to direct attention.

We have not space to admit of entering upon the minutiae conveyed in the report of Mr. LOCKE, and the tabular matter furnished by Mr. REED (who has ample means of acquiring correct data), which are set forth in a clear manner in the prospectus under notice; but it may not be amiss to observe that the calculations are founded upon actual, and not assumed, data, and that, in some instances, the rates taken as the grounds on which the revenue of the company is estimated is only one-third that now paid.

Our attention has been again directed by a correspondent to the affairs of the Southampton Dock Company, who has submitted to us certain printed documents on which we have to offer some further observations. It appears that in April, 1842, a circular was addressed to the shareholders, offering one share and one debenture in proportion to every three shares held by a proprietor, the former representing 50*l.*, being at the rate of 60 per cent. discount, or 20*l.* per share, and the latter at 30*l.*, bearing interest at 5 per cent.

This arrangement was proposed in consequence of a prior proposition—contained in a bill prepared—having been thrown out, from the "standing orders" not having been complied with; the two propositions, however, differing to this extent:—that, while the present application to Parliament has reference to a nominal capital of 350,000*l.*, to be raised on such terms as the directors may determine; the original proposition, as contained in the bill to which allusion is made, had for its object alone the further advance of 100,000*l.*, over and beyond the 250,000*l.* said to be actually received on the original capital, and which sum of 100,000*l.* was intended to represent 250,000*l.*, so that the company would have been restored to its pristine state, in having an actual capital of 350,000*l.*—although such sum would represent 500,000*l.*, the shares held by the parties being nominally 100*l.*, but on which only 70*l.* would have been virtually paid. Assuming, then, that 2000 shares (the actual number, we believe, being 1800) and the like number of debentures were to be issued, on which the respective sums of 20*l.* and 30*l.* were to be paid—or, in all, 100,000*l.*—the total capital raised would be 350,000*l.*; but, on reference to the last proposition of the directors, we find that—in addition to 264,480*l.* 4*s.*, received on account of 5319 registered shares, and sundry instalments on 1681 shares forfeited—the several sums of 7854*l.* on 747 re-issued shares, 12,432*l.* on account of debentures or loan-notes, and 26,500*l.* borrowed on debentures, or, in all, 46,796*l.*, has been raised, which it is now proposed should be, by the amended act, legalised, as well as power given to the directors to raise a further capital.

The peculiar position, then, in which the directors have placed themselves and the company may be said to amount simply to this:—that, having failed in raising the required capital sanctioned by the Act by the issue of shares, or, under the provisions, to raise the same by way of mortgage, they proposed to amend the said Act, so as to raise money, with the view of effecting their object, by the issue of further shares, which, on the payment of 50 per cent.—viz., to the extent of 100,000*l.*, shall be considered as representing a capital of 250,000*l.*. They subsequently propose to raise a nominal capital of 200,000*l.*, by the issue of forfeited shares and debentures, the former being at 25*l.* and the latter at 30*l.*, under the terms already mentioned; and, to the end, come forward with a further application to Parliament, requiring powers to raise 350,000*l.* nominal capital, on such terms as the directors may think fit, and with power to convert the loan-notes into capital stock. It is for the proprietors to determine how far they will sanction the acts of the directors in their application to Parliament, and how far they may be now entitled to any pre-emption in the issue of shares or debentures, which were proffered at a time when no legislative measure was in force to legalise the act, or to give security to the holder.

ORIGINAL CORRESPONDENCE.

MR. SIMS'S IMPROVEMENTS ON STEAM-ENGINES.

TO THE EDITOR OF THE MIXING JOURNAL.

SIR,—In my last letter I stated that the "combined" not only did not possess any advantage in point of economy, but that the single expanding engine could do the same work in a much more direct and simple manner. I also stated, that the "combined scheme" was only a complicated contrivance for enlarging an engine. These assertions I am prepared to prove. In Cornwall, where these engines are well known, Mr. Sims will never succeed—at least to any great extent; he has sacrificed economy to an imaginary danger, and his principles are fallacious; this he knows, or, at least, ought to know, as an engineer, and I can only consider his present conduct as a bold attempt to impose upon the credulity of the public. I am sorry that Mr. Sims, in his reply, should have so far forgotten himself as to get into a rage; at present I am not disposed to follow his example, and, therefore, passing over those harsh terms, which do not at all affect the question under discussion, I now come to those few remarks of his really bearing upon it. He says, in allusion to my first assertion in my former letter, "it is a perfect novelty." Perhaps to him it is, and it is no less true, as he indirectly acknowledges, when he says, "large steam valves and pipes was a recommendation of mine." Does Mr. Sims really believe this? If so, the following statements will, I hope, undeceive him:

In the Consolidated Mines, under Mr. Woolf, 8-inch steam valves were used by him in his 50-inch cylinder engines, but the first engines, erected by Hocking and Loam (the gentlemen who succeeded him) in this mine, in 1832, were supplied with a 12-inch valve and 16-inch pipes; and I am informed that all the engines subsequently erected by these gentlemen have had steam valves and pipes of a much larger size, in proportion to the cylinder. I have seen some of these engines, and one in particular, which I saw at Great Wheel Prosper (only a 60-inch cylinder), had a 16-inch valve and a 20-inch pipe. This engine was erected in 1837. Large steam-pipes are found, by these gentlemen, an effectual remedy against priming. Mr. Sims must, surely, have known these facts, yet he claims the merit of having first recommended them, in 1839—just seven years after they were in use by his neighbours. The relation which high-pressure steam bears to the explosions of boilers, is of so much importance as to demand a distinct notice, and as the arguments bearing upon it would occupy too much of your valuable space now, I must defer them to a future period, when I shall be glad to discuss the subject with Mr. Sims; meanwhile, I am content to bear all the disgrace which, he says, attaches to the assertion. He next says—"I shall be glad to take an order from your correspondent for a combined engine." No. I never, for a moment, doubted it; and it is this anxiety to get it which has, no doubt, induced him to advocate the resumption of the "combined scheme," and which makes him so very angry with me for having attempted to place the public upon their guard against his plausible fallacies.

For the purpose of placing the combined engine in a proper light, and comparing it with a single engine, I, at first, intended to have published a set of tables, calculated by Mr. Loam, who kindly furnished me with a copy, two years since; in these tables the combined is compared with a single engine, showing the work which each does upon a given quantity of fuel—in fact, completely demonstrating the superiority of the single engine, but, as this would take up too much of your valuable space, and occupy more time in arranging them than I can spare, I must content myself, for the present, with stating a few facts, sufficient to illustrate the point.

It is a settled opinion among engineers, that, to ensure a high rate of expansion, an enlarged cylinder is necessary; this Mr. Sims does in an indirect and complicated manner, while, I contend, it can, and ought to be, done, in a direct and simple manner, in the single engine. For the purpose of illustrating this, I have appended the following calculations, showing a 50-inch engine, loaded 18-3 lbs. per square inch, and a 76-inch, loaded only 7-7 lbs. per square inch (which will be nearly equal), each engine to go 9-feet stroke, and to have steam applied, 30 lbs. per inch at start.

No. 1.—50-INCH CYLINDER.

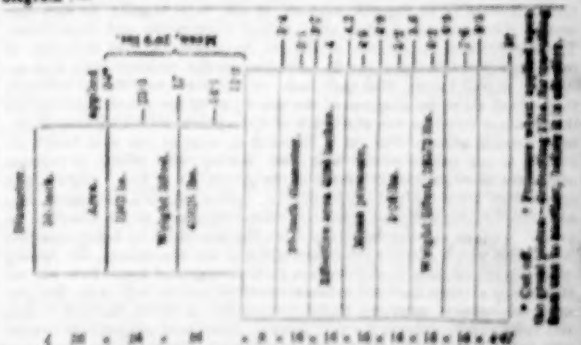
Diameter.	Area.	Pressure of steam when applied.	Length of a steam valve, or the space thro' which steam travels while steam valve is open.	Contents of steam volume.	Quan. of water in 1 stroke, allowing 100 <i>l.</i> of steam to 1 of water.
50	1963	30 lbs.	26 in. or 2 <i>ft.</i> 2 in.	70686 in. ³	871 in.
Quantity of water evaporated to 1 bush. of coal (84 lbs.)		No. of strokes to 1 bush. of coal.	Mean pressure upon the piston.		Length of stroke.
10000	227	18-3 lbs.	18-3 lbs.		9 feet.
Area.	1963	18-3	9	237	76,621,626 lbs., or less 1/4th for fric., 61,297,285

No. 2.—76-INCH CYLINDER.

Diameter.	Area.	Pressure of steam when applied.	Length of a steam valve, as above.	Contents of steam volume.	Quan. of water in 1 stroke, allowing 100 <i>l.</i> of steam to 1 of water.
76	4536	30 lbs.	9 in.	40824 in. ³	492 in.
Water evaporated to 1 bush. of coal.		No. of strokes to 1 bush. of coal.	Mean pressure on piston.		Length of stroke.
10000	411	7-7 lbs.	7-7 lbs.		9 feet.
Area.	4536	7-7	9	411	129,195,712 lbs., or less 1/4th for fric., 103,356,576

From the above tables, it will be seen, that, while the 50-inch engine expands three times, it takes 70686 inches of steam, while the 76-inch engine expands twelve times, and takes only 40824 inches; thus, by enlarging an engine from a 50-inch to a 76-inch, the same work is done upon little more than half the coal, so that the steam, which was thrown away in the 50-inch, in consequence of its heavy load not enabling it to expand, is, in the 76-inch, as effectually saved as if I had another cylinder, and even more so. This proves what I have before asserted, that all Mr. Sims can do is to enlarge his engine, and the difference in economy is this:—In the single cylinder engine the steam is expanded direct, without any loss arising, as in the combined, from its passing from one cylinder to another, which amounts to nearly one volume, before it can again become efficient, besides the leakage of the additional piston, &c.

Mr. Sims says, in his last letter, "I can lift an equal load on the up-stroke, with the great piston, as on the downstroke with the little piston." Let us look at this, and take his 50 and 90 combined, as in the following diagram:—



According to the above diagram, the little piston lifts 11925 lbs. on one stroke, and the great one 23523 lbs. only; thus, the steam in the great cylinder travels through a space equal to nearly twenty feet in length of the small cylinder, and does only about half the work which the small cylinder does in nine feet; and this, Sir, is what Mr. Sims calls economy! This is his boasted 150 per cent. saving! In short, Sir, the "combined" has the glaring advantage of novelty—of, indeed, that he has made to obtain it, I cannot help thinking "he is paying too dear for his whistle."

Now, Sir, having exposed the fallacy of combined engines being most economical, I will just advert to another point connected with it, and which

is shown, if the 50 and 90 were constructed into a combined, the great piston would lift 1500 lbs., and the duty would be 10,127,712 lbs.

Mr. Sims has found convenient to pass over in silence.—Mr. Sims has hitherto appeared to the public as the inventor of this "peculiar combined engine" (no great merit, even if it were so); but I protest against his assuming to himself what properly belongs to another. In fact, Mr. Sims is the inventor, and Mr. Sims has only pirated his (Mr. Sims's) principle—the only difference being in point of arrangements. Mr. Sims put one cylinder in another—Mr. Sims put one upon the other; the application of steam is precisely the same in both engines—viz., upon the small piston first, then under the great one. An engine, upon this principle, was first erected by Mr. Sims, at Wheel Valley (at a time when novelties were not so attractive as now), condemned and altered in 1824.* This, added to an impression among Cornish engineers, that it is defective in point of economy, in some measure, accounts for the impunity with which Mr. Sims has been allowed to claim, as his invention, that which properly belongs to another. In future, my strictures will apply to Mr. Sims, not as the inventor, but simply as the advocate of Mr. Sims's combined expansive principle. I hope Mr. Sims will be satisfied with this more humble, but equally meritorious, title. I must decline, for the present, Mr. Sims's invitation to come forward and try his engine—I can try the principles without inspecting the engine. I am not, however, without information respecting his engine at Carn Breu.

In conclusion, let me request Mr. Sims not to deceive himself, or expect to drive me from my object by hard words—"For I am armed so strong in honesty, that they pass by me as the idle wind, which I regard not." I owe you an apology, Mr. Editor, for having taken up so much of your valuable paper, but the importance of the subject, and the interests involved, demanded it. I could not say less, without the risk of being misunderstood.

St. Day, March 14.

IMPROVEMENTS IN THE STEAM-ENGINE.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—Our attention has been called to Mr. Sims's letter, published in your paper of the 11th inst. We should best consult our feelings, and, probably, our interest, by allowing your readers to form their estimate of the value of that document, without our taking any notice of it; but the personal manner in which he has referred to us, forbids us from remaining silent. The temper and feelings under which it must have been written will be easily appreciated by all who may read it; and we feel confident that the writer himself must, before this, deeply regret his ever having allowed it to meet the eyes of the public.

With the letter of "M." in your Journal of the 6th inst., we had no more to do than Mr. Sims himself; nor did we conceive that any one would have considered it necessary to reply to the statement of the letter which appeared in your paper of the 28th of January. We are quite content to let the reputation of our engines rest on their performances; and we think that Mr. Sims had better follow our example. Had we any wish to enter into a controversy with our friend on this subject, we beg to assure him that we do not require the aid of a third person. Without wishing to undervalue the value of Mr. Sims's experience as an engineer, or to detract from any improvements which he may have made in steam-engines, he will, perhaps, allow us to say that we have had opportunities of estimating the properties of double cylinder engines, in all their variety—quite equal, if not more than he has had; and the result has been to confirm us in the opinion, that engines of one cylinder only can be constructed so as to embody all the advantages, without the disadvantages, of Mr. Sims's double cylinder engine. And we are further strengthened in this opinion by facts which we possess relative to the work which his combined cylinder engines are performing. We have, long ago, made calculations, founded on the rate of expansion of steam actually obtained in Mr. Sims's engine, as compared with that of Taylor's engine, at the United Mines, to show by which engine the greatest amount of power is derived from a given quantity of steam at the same pressure. These calculations have been placed in the hands of our employers; and a more convincing argument in favour of single cylinder engines cannot be furnished.

There is one statement in Mr. Sims's letter which we dare not leave uncontradicted; and we should hope, by calling his attention to it, he will do us the justice to acknowledge the error into which he has fallen. He claims credit for having suggested the use of large valves and steam passages, and quotes, from a lecture delivered by him in 1839, a paragraph in support of his assertion. He then insinuates that we adopted his recommendation in the erection of Taylor's engine, at the United Mines. Unfortunately for Mr. Sims, Taylor's engine, at the Consolidated Mines, was erected by us, in 1832, with valves of the same size, with the exception of the steam valve, which is two inches less (that in the first case being twelve inches, and in the latter fourteen inches diameter); but Taylor's engine is only an eighty inch cylinder, whilst Taylor's is an eighty-five; and, notwithstanding the value of the latter is fourteen inches in diameter, it is only allowed to open so far as to be equal to a twelve inch valve. We might name other instances of engines having been erected by us previous to 1839, in which the valves and steam passages bear a larger proportion to the size of the cylinder than they do in the case just referred to; whilst, on the other hand, we do not find, in either of the engines erected by Mr. Sims, during the same period, that he has thought proper to avail himself of the advantages of the improvement which he is so anxious to have the reputation of having made.

Having already disclaimed all knowledge of the letter of "M." until we saw it in the Mining Journal, it is not our intention to defend it against the attacks which Mr. Sims has made on it; but as the questions involved in the discussion are of a public nature, we feel bound to add that, in our opinion, the letter has not met them fairly, and that the ground which "M." has taken may be maintained against much stronger arguments than any Mr. Sims has yet advanced.

We cannot help expressing great regret that Mr. Sims's unfair and ill-bred attack on us should have appeared upon the necessity of those remarks; but, having made them, we beg to assure that gentleman that we have been actuated by no spirit of rivalry or unduly disposition towards him. We are so ready on any one to give him full credit for the improvements which he has introduced in steam-engines; and we shall be glad to find him exerting his talents, in future, to the same great object, instead of employing them in the mean and unprofitable task of making personal attacks on those who are not conscious of ever having given him the least cause for so doing.

HUCKING & LOAN.

Andover, March 20.

THE INTERNAL TEMPERATURE OF THE EARTH.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—The theory of increase of internal heat, which supposes its continual increase as we descend, appears to me to be founded on very uncertain data, and not based on recent observation and experiment. The experiments, as hitherto conducted, have been confined to mines, or to borings through beds chiefly belonging to the carboniferous system. Now, it is well known, that such beds contain vast quantities of hydrogen in the fluid state, forming one of the principles of the mixed combustibles they contain; that on the admission of atmospheric air—oxygen and certain chemical action—this gas is liberated in more or less abundance, according to the nature of the beds, and, uniting with carbon, it becomes one of the chief proximate causes of the generation of heat, discharging its combined space sulphur, phosphorus, carbon, arsenic, bitumen, &c., and thus forming different species of inflammable gas, which, blending together, produce varying degrees of heat, the heat of the air being regulated by the law which governs the temperature of the atmosphere, the density of its lowest volume containing the greatest degree of heat. This will satisfactorily account for local accumulations of heat, as well as for the production of explosive mixtures, shocks, &c., in mines, but still it does not satisfactorily account for that uniform increase of temperature observable as we descend into the bowels of the earth—hence, in the absence of chemical agencies, we must look to the more general and complicated phenomena, considering the earth as one vast conglomeration of forces, which have more or less susceptibility of reception and retention of that heat which is perpetually abstracted from the atmosphere, the earth being permeable and accessible in all parts to heat. The calculations made by some known in the walks of science, on the rate of increase as we descend, are as satisfactory in the general tendency to they are to each other—claim being no regard paid to the absorption or dissipation of the earth's surface, its climate, or its constitution of matter, by which it is evident the degree of internal heat is regulated. The presence of thermal waters has also been adduced as a proof of increase of internal heat; but, these hot springs, which are not meted in volcanic regions, are evidently, many of them, of more fluid duct, or are so impregnated with saline substances and

earth which at once denote their source of origin, and the cause of heat. The greatest heat in the mine of Monkwearmouth Colliery is disposed within the bubbles of gas issuing from the waters at the bottom of the mine, and this heat appears to be generated by the presence of water and atmospheric air; and such, perhaps, is the true cause of increasing heat in most, if not all mines, it being a well-known fact, that deserted mines show a corresponding decrease of heat, as the multiplied causes of generation of heat are removed. A knowledge of the laws which govern compound bodies in decomposition, and in the recombinations of their elements, is essentially necessary to those who would find appliances for the ventilation of mines, for the very means used as an effectual remedy for one evil may awaken a slumbering enemy still more dangerous and destructive; the strenuous advocates for warm and cold currents of air being introduced into mines containing inflammable materials will do well to reflect upon this.

March 17.

TINCROFT MINE—ALTERNATIONS IN MINERAL DEPOSITS.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—Perhaps it is not generally known to your readers that the account of this mine, at no very earlier period than the present, serves to give some idea of the uncertainty in the disposition, number, and contents of veins; and, at the same time, upsets all received theories on the subject of mineral deposits.

There were here five copper veins, three of tin, one mixed (that is, tin and copper), in about one furlong, north and south, two of which only proceed in a straight line; one alters its direction repeatedly, in a gradual approach to the perpendicular, and is intersected by two copper veins. One of these, the south vein, varies in width, from one to six feet, and was rich in copper through the upper granite and slate, but became hard and poor on re-entering the lower granite. Another vein varied from one to twelve feet in width, and running nearly perpendicular, went off in two branches, becoming very poor at their point of separation; below, however, the latter, it became richer, and was worked to a depth of 125 fathoms from the surface. The first offset was a very poor vein, but the second very abundant in copper pyrites. The sixth vein yielded a little tin; the seventh, copper and iron pyrites; the eighth yielded copper and tin, sometimes mixed, and sometimes running side by side down the vein; and the ninth was very prolific in tin for a depth of forty-five fathoms from the surface, when it became poor, and filled with iron pyrites; but at a greater depth, where it traverses another mine, it has been found as rich in copper as it was, near the surface, in tin.

In two of the veins, granite was found on one side, and slate on the other, and detached masses of granite and slate were found in it frequently. When the vein traversed granite, it contained fragments of slate; and when it passed through slate, detached fragments of granite were found. In fact, I know not where so many contradictions are assembled as are to be found in the mineralogical and geological view which this mine presents.

New Broad Street-court, City, March 22.

T. IRVING HILL.

P.S.—In a statement of Tincroft, published in the Mining Journal lately, from professed official authority, it is given out that they have got a "hard ironstone"—meaning, I presume, the peroxide of iron, or brown glassing of Werner, which they hail as "a favourable indication!" I confess I never heard that this, in the ordinary, but expressive, language of our miners, was a "kindly" symptom; and, with every deference to the source from whence it emanated, I mention it, merely to show the difference between mining in London and in Cornwall.

T. H.

[We are obliged to our correspondent for his communication, but there appears nothing which is extraordinary in the statement submitted—it being only one of the many instances of cross-currents, heaves, and other alternations which ever attend mining operations.]

MINING IN CUBA.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—The opportunity which I have occasionally had of reading the interesting communications of the well-informed correspondents, and the other able articles, of the Mining Journal, has afforded me so much pleasure and valuable information, that I cannot but desire to express the sentiment of high esteem which I feel for that elevated tone of character which the publication sustains, and beg the privilege of communicating to you some little information which I possess of a new mine in Cuba, that may not be without its portion of interest to the interested readers of your valuable Journal.

About two years ago, a Mr. George Ditson, of Boston, in the United States, was passing through the district of Hayatana, in the island aforementioned, situated between Puerto-Principe, of tobacco notoriety, and Nuevitas, on the northern coast of Cuba, he discovered on the surface indications of copper ore, and to a sufficient extent to induce him to make application to Government for a tract of land, and the privilege of working a mine. This, after going through the long and tedious process there required, of announcing, publishing, and paying for innumerable documents, was granted. He immediately commenced operations, and was soon convinced that there was a rich lode of ore; but, owing to the difficulty of obtaining proper men to carry on the work, it was for a time suspended—in the mean while, Mr. Ditson returned to the States, and Messrs. John Simmons and Sons, wealthy gentlemen of Boston, joined him in the mining speculation, and, after obtaining some efficient labourers from Cornwall, he returned to Cuba, and commenced again by sinking a new shaft, and driving levels, and before he had sunk deep enough to require anything more than a good iron hand-pump, to clear the water, a cargo of ore was produced, which was sold sometime since in Liverpool, yielding 14 per cent. This, though a moderate produce, might easily have been raised considerably, had the workmen in the levels had sufficient knowledge of the ore to have enabled them to pick it down with more discrimination. The ore was not washed, or assayed with ordinary care, but most all of it was indiscriminately taken out and shipped, without being broken up. At the depth of five fathoms below the surface, a lode of rich black ore was struck, seven feet in width, dipping north. In this new, as well as in the other shaft, several levels are now being driven, and much rich ore raised, though, as yet, not the least expense has been incurred for machinery. I speak of this as being remarkable; for, perhaps, no mine in the world has ever produced so much at so little expense, and the prospect for the time to come appears now equally advantageous, and the proprietors, Messrs. Ditson and Simmons, the former of whom is now in Cornwall for the purpose of obtaining more miners, may well calculate on a rich reward for their enterprise. The course of the lode is nearly due east and west, and the strata resembles that of the Cornish mines. The name given to the mine is "Marion," and, with your permission, I will, from time to time, give you accounts of its advance and prosperity.

Falmouth, March 13.

[We shall be glad to hear from our correspondent, but his letter bears too weak lines, and might be construed as a "puff direct." We doubt not, however, that Cuba holds out great prospects to the capitalist, judging by the past, yet we are more anxious for the application of capital to our home mines than those in foreign climes.]

ANTHRACITE & BITUMINOUS COAL.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—I was much pleased with the clear and explanatory description given in your columns of Kymer's patent furnace, which I have since had an opportunity of inspecting, and have good reason for believing that the saving effected is greater than you mention. It would, therefore, be desirable if the patentee would afford to others, like myself, interested in the subject through the medium of your columns, information as to the exact quantity of anthracite used to raise or produce a given quantity of steam, so that the question might be treated in a commercial point of view, as to expense, as compared with the use of bituminous coal. I can readily imagine, from the observations made on the occasion of my visit, and the information then rendered me, that a considerable saving must be effected in the cost, assuming that anthracite can be delivered at a moderate price, and which I learn, for the description of fuel used being mixed with rubbish, would not exceed 25s. to 26s. per ton in the port of London. Therefore, I will not anticipate the information which I doubt not will be accorded by the parties.

Dunelm, March 14.

A MANUFACTURER.

[We are not aware whether any series of experiments have yet been made, with the view of ascertaining the actual saving in fuel and cost; the furnace was noticed in the Journal of the 6th inst., the letter would depend upon circumstances; as to the description of anthracite used (having reference to its composition and specific gravity), and the locality from whence obtained, we doubt not that Mr. Kymer or Mr. Seligman will reply to the queries submitted by our correspondents.]

SOLID AND HOLLOW RAILWAY AXLES.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—As you have, on former occasions, called attention to the nature of railway axles, and the change the iron undergoes from the continuous jumping motion of the vehicle on the railway, and, as the subject is important in more views than one, I trust you will allow a few observations to appear in your valuable Journal on the comparative merits of solid and hollow axles. Mr. York has satisfied every scientific man who has conversed with him on the subject, that hollow axles can be made by as simple means, and at as reasonable a rate, as solid ones, and all comparative trials have hitherto proved the vast superiority of the former; and there can now be but one opinion as to the iron of the solid axle becoming completely crystallised at the journals, from the percussion arising from rapid transit, and thus being the cause of fracture.

What I wish to suggest is, a series of experiments, on a grand scale, to test completely the advantages of the hollow axle, and thus set all controversy on the subject at rest; and, to a large company, like the Birmingham, or Great Western, the expense involved would really not be worth consideration. My suggestion is this—let a company take 100 solid and 100 hollow axles, made in the best manner, and as nearly alike as possible; place them under a number of railway carriages, keeping an accurate account of the distances run; after 10,000 miles had been travelled over, let two or three of them be broken; at 20,000 miles, two or three more; and at 30,000, 40,000, 50,000, and up to 100,000 miles—taking careful notice of the number of blows required to break them, the weight of the hammer, or the pressure per inch by an hydraulic press, with the nature of the fracture, crystallised appearance, &c. This, I submit, would be the only fair test; as, no doubt, at the ensuing trial, at Wolverton, each party will endeavour to produce the strongest possible article, and of a superiority which they would not think necessary to use on general occasions.

I trust this will attract the attention of some influential person, who may induce a company to undertake such an experiment.

Birmingham, March 22.

A RAILWAY ENGINEER.

RAILWAY AXLES.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—A few weeks since, I noticed a paragraph in your paper, stating that a number of scientific gentlemen had assembled at Camden Town to witness several experiments upon the patent hollow axle. The paragraph infers, that it is the first time that experiments had been made upon an iron tube, compared with a solid piece of iron of the same diameter. I beg leave to state, that I and several others made a variety of experiments nearly twenty years ago in Scotland, both by horizontal pressure and perpendicular, and we ascertained then that the tube was the stronger of the two; but I suggested that the outside skin of the tube should be turned off, which was done, and upon applying the horizontal pressure it became the weaker. Now, the journal of the axle must necessarily be turned out at least one-sixteenth, and, consequently, the original surface taken off; I, therefore, would not give the preference to the patent hollow axle until the patentee made another public experiment, by having one turned and complete for use, and then placed horizontally with the same bearing as it would have when in use, and then placing one of those that are at present used in the same position, and putting a strain upon them until they broke, when I am very much inclined to think the hollow axle would break off at the turned journals like a piece of glass. Till this test is applied I would have the most confidence in the solid axle.

Birmingham, March 22.

CANDOR.

ON THE CONVERSION OF IRON INTO COPPER.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—Having had my attention directed to the article which appeared in the Mining Journal of the 4th instant, entitled "Natural Organisation of Rock," I was somewhat surprised to observe the ignorance displayed by your reporter on a subject which every chemist, and those connected with precipitation works, are so conversant. It is to correct the error into which your correspondent has fallen that I now address you, as I find the paragraph copied into other papers, and, therefore, calculated, without correction, to mislead. As the subject brought forward by Mr. Cairne, at the Liverpool Polytechnic Society, on the natural organisation of rock, was discussed and disposed of on the occasion, it is not necessary I should intrude my opinion thereon, except to express my surprise that the question should ever have been entertained—indeed, any practical miner, who is used to heaps of deals, or attle, would find abundance of specimens, both at the bottom of the heap and at surface, the action of the atmosphere having an effect upon the stone submitted to exposure, as well as a nucleus being formed, and substance acquired, by disintegration and incrustation, as in the present instance. The point to which I wish to direct your attention, is the "extraordinary conversion of iron into copper," which we are told is effected by "immersing in the water issuing from the ore" pieces of iron, which are eventually converted into copper. If I mistake not, an interesting paper on this subject, but communicated in a far more scientific manner, was inserted in a former Number of your Journal; but, as such may have escaped the attention of some of your readers, I think it would be desirable to reprint it, as not only being of an interesting character in a scientific, but highly useful in a commercial point of view. It is not that iron is converted into copper, but the affinity which iron has for the sulphuric acid, with which copper, in a fluid state, is found in combination in the water raised from several mines in Cornwall, Anglesea, and the county Wicklow, causes the copper in solution to deposit itself on the iron, which is, for such purpose, placed in vats, or troughs, into which the water is admitted, and which, passing over the iron, deposits in its course the metallic particles held in solution; the iron becoming encrusted with the copper, it is left until, in some cases, the product of the precipitate yields 60 to 70 per cent. of copper, the iron having passed away, or entered in a certain proportion in combination with the copper, thus assuming the precipitate to be 70 per cent. copper, 20 iron, and 10 earthy particles. It is not my object to enter upon the scientific discussion of the question, which I leave to able hands, but I think it only right to direct your attention to the error into which your correspondent has fallen, in stating that scraps and fragments of iron were, "by immersion in the water issuing from the ore, eventually converted into (copper) the more precious metal."

Andover, March 21.

ORIGIN OF CALCULUM.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—The metalloids, Calcium, or Earth of Lime, known as one of the fifty-four uncombined bodies, is a compound proximate principle, generated by animal life, if we admit the classification of Linnæus, and others, that all organic forms of life secrete lime are strictly and exclusively of animal nature—it is developed as a portion of the living system, uniting with the mucus, gelatin, albumen, and other parts of the organic frame, forming bones, shelly coverings, and, in coral formations, stony concretions, resembling in appearance, and mechanical and vital action, fungi, and other terrestrial vegetable products. In the living body, as also in the fossil and mineral aggregate, calcium is almost invariably united with silicon, varying from this mineral, as containing a greater portion of oxygen, and being of itself a non-elastic body, but necessarily held in aggregate by carbon, silica, sulphur, and other bodies, and forming with silica, lime, magnesia, and mountain chains, and a vast portion of the superficial beds of the earth; it is invariably combined with an acid, and enters freely into combination with numerous compounds. In its simple combinations it forms six species, or varieties—viz., carbonate, sulphate, phosphate, fluoate, nitrate, and borate of lime, and these species are again divisible into numerous varieties.

Calcium is secreted in the coral polype, much in the same manner as the constituents of the blood are generated in the higher orders of organic animals; these minute infusoria, although almost invisibly minute in their parts, are the architects of the by far greater portion of the superficial crust of the earth, building in a series of generations from the antithemistic depths of tropical seas. Calcium also enters largely into the composition of the shells of mollusca, crustacea, and all shell-bearing animals, and the bones, teeth, and shells of terrestrial animals. Every limestone, chalk, marble, and calcareous bed, owes its origin to this one common fountain, many of these, as the ammonite hills of Egypt, and the shells, limestones, and marbles, of this country, being wholly composed of the exuviae of marine animals, and although, in particular formations, all traces of the organic body have disappeared, we have still the certainty before us, that their origin is the same, the local and general changes to which the earth has been, and still is, exposed, causing fossil bodies to decompose, and become as one with the mineral kingdom. Much controversy has taken place among the learned of the present day concerning

the origin of calcium, but it is unquestionable, that lime is generated within the living system, and not, as supposed, abstracted from the waters and the earth, nor is there any other rational mode of accounting for the accumulations of coral which choke up tropical seas, where it is evidently the product, as it is the chief constituent, of the organic body, generated by the galvanic principle, now so generally acknowledged to be manifest in all organic bodies. It is also almost invariably combined with carbon, which it greedily absorbs; carbonate of lime occurs in upwards of 600 known species, all the crystals being in the form of an obtuse rhomboid. It is found in the veins of all rocks, from granite to indurated clay, and sometimes in strata between beds of calcareous mountains. Next to silica it is one of the most important compounds secreted by organic bodies; the sum of its secretion, in large quantities, depending upon the particular local action of the medium in which it is produced—heat, and freedom from local disturbance, being essentially necessary to produce the coral formations, and thus it is they are confined within the range of the tropical band; in other invertebrate animals, particularly infusoria, the direct agency of atmospheric heat is absolutely necessary for the production of this earth, but in vertebrate animals, having red blood, the natural heat, and consequent increase of chemical and mechanical action, a sufficient temperature is produced and maintained, without the direct agency of atmospheric heat, being found in combination with carbon or phosphorus, coating the cartilaginous membrane, or forming, in union with gelatine and albumen, the skeleton frame, being absolutely essential to the maintenance of form and condition of numerous species. Many of the British limestones abound with coral polyps; some of the marbles consist wholly of a particular species of oysters, analogous to those at present existing in tropical seas, and sometimes united with the bones, teeth, and vertebrae of fishes, sea eggs, crabs, lobsters, and other shell-bearing animals.

The incessant increase of this earth is palpably manifest in all parts of the ocean, the cause of its production being invariably the living principle manifest in defined action, produced by defined local influences; for, did animals secrete it simply by abstraction from the medium in which, or on which, they move, the phenomena would be general, and common to all countries, instead of being, as they now are, locally disposed, according to temperature, dip, and inclination. In common with sodium, magnesium, chloride, phosphorus, gelatine, and albumen, is the component of the living frame, all being derived from the mechanical and chemical action of life, and from the elementary medium in which they move, which is the grand fountain of life, and the general receptacle of departed forms. In some parts of the world extensive beds are formed, from deposits of calcareous matters, held in suspension by springs and running streams, but in aggregate these beds are as nothing compared with natural depositions.

March 14.

GEOLOGICUS.

GEOLOGY—NEW SYSTEM OF PHILOSOPHY.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—In contentions for truth, and not for mastery, all modes by which it can be elicited may be deemed justifiable; but as, in personal encounters, the combatants are armed with like weapons, to the end that no undue advantage be given to either party, so, in scientific controversy, men should use the arms which belong to science. If Mr. Montague's letters are unanswerable, by reasoning upon facts contradictory or confirmatory thereof, then let them remain unanswered for the time; do not bring in an English percussion musket to fight a man armed with a Chinese wooden sword, or a field piece against a bombardier—a 40-horse steam-engine to crush a gnat. We must, however, have no mistake on the meaning of the words we use, or we shall have the confusion of Babel over again. In one of the letters "On the Origin of Mineral Veins," your correspondent, "J. S. D.," says:—"Messrs. Deakin and Thompson take up the theoretical part on *theological grounds*; the word *create* had, perhaps, better have been left out, but its usage is justifiable and proper, for the presence of the Sun creates heat, and thereby causes a substance or being to exist; thus fishes and fowls, as heretofore, are created out of the waters, and animals and vegetables out of the earth. This word was variously used by the Jews, and we are, therefore, fully justified in preferring it, in many instances, to the word *produce*." Now, Sir, although this childish non sequitur emanates from Oxford, I will venture to break a lance with the champion, and refer him to any Hebrew scholar for a confirmation of what I am about to advance.

There are three words used by the Jewish writer, Moses, in his first chapter of Genesis—*created, made, and formed*—and the man who so scientifically classed the "great whales," never confounded these three words; they are not interchangeable, and, as a friend of mine has well observed, "the word *create* always expresses the act of bringing a new thing into existence, and is applied to the three new existences of *matter, life, and spirit*. The word *made* expresses the act by which these new existences are diversified under all the various forms of which these several classes are capable, as the various forms of matter and various forms of life; and by the word *formed* is expressed a still lower act than making, like that of a potter forming a jar of clay." The learned doctors of the church seem to have forgotten these facts, although stating them in the face every day, and they seem quite willing to give up the *creation* altogether; if those who are within the holy fane abandon the ground they have so long and so proudly stood upon, well may we who stand without express our doubts that the things which are seen were made otherwise than of the things which do appear—the Rev. W. D. Conybeare, by adopting the systems of Lehmann and Werner, the former of which professes to be "philosophical and just;" Dr. Buckland and Chalmers, by making their "first great cause" "transform" the heavens and the earth "out of previously existing materials"—see *Bridgewater Treatise*. These learned men have virtually abandoned the only meaning that can be fairly attached to the word "create." Well, Sir, let it be so, but "great men are not always wise," neither will great names carry much weight in this matter of fact age.

I would recommend "J. S. D." to study his native tongue before he again criticises, or attempts to justify his preference of the word *produce* for *create*, seeing that they have nothing in common. I have yet to learn that the "presence of the Sun creates heat, and thereby causes a substance, or being, to exist," if it were true, which it is not, that the word "create" was variously used by the Jews, it by so means follows, that we are justified in preferring it, in many instances, to the word *produce*. If by these observations, I call forth the anger of "J. S. D.," he will understand that I have not created an angry feeling in him, but simply evoked it. Werner is satisfied to pass over in silence all that has been written "On the Origin of Mineral Veins," by various wise men before Agricola, seeing that they attribute the richness and poverty of veins to the position of the mountains. With respect to the Sun, partly in the influence of the stars, he next states the opinions of some fifteen or sixteen philosophers, who each, in his turn, blew a cloud of smoke, out of which we have not to this day been able to obtain light, but if it be true that there is no smoke without fire, I do venture to say that by combining the truths of the theories of our forefathers, and keeping close to facts, we may yet be able to see *ex fume datus homo*. With this introduction, Sir, I shall, with your permission, enter the lists against Mr. Montague and his school; and as often as you can spare me room, in your valuable Journal, proceed to demolish the new system of geology; I will be as concise as possible, and, therefore, you need not fear my taking up one-tenth part of the room Mr. Montague has been allotted; I do not quarrel with his facts, or dispute them, but I will show that his system is like all that have preceded it—*bores*.

PATRICK LORRA.

Bath, March 22.

THE LATE EARTHQUAKE—STAFFORDSHIRE.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—As, probably, any information relative to the recent earthquake will be acceptable to many of the readers of your scientific Journal, permit me to add my note to what has already appeared in print upon this remarkable event. The shock was felt in this district very perceptibly at about a quarter past one on Friday morning, the 17th of March, and lasted for a few seconds. The Rev. T. Fowkes, the respected incumbent of Newchapel, describes the effect as shaking the doors and window frames of his residence to that extent, that he at first imagined that there were intruders upon his premises. Mr. Williamson, of Giddeburgh Colliery, states that he felt the vibration at about the same time, and arose from his bed under the supposition that some one had crept into his room, and was about to make his exit, and was much surprised, upon examination, to find no cause for alarm, and was quite of a loss to account for the singular circumstances of his bed having been raised, until, upon inquiry the morning following, he found that one of his sons had also been disturbed in a similar manner, when it at once occurred to them that the cause had been an earthquake. I could give several other instances of similar occurrences, but am fearful of trespassing upon the columns of your paper, and trust that the two cases I have selected, will be sufficient to prove that the effects of the late convulsion of the earth extended as far as this district, although, happily, without causing either alarm, loss of life, or property, as in the late calamitous events in Guadalupe and Martinique; trusting you will excuse this hasty account. I am, Sir, &c.

Newcastle-under-Lyme, March 22.

A CORRESPONDENT.

INSTANTANEOUS IGNITION OF GAS.

SIR,—I was much pleased to see, the other day, in the Polytechnic Institution, London, the instantaneous ignition of a range of gas-lights by the electric discharge. Many years ago, I recommended this to one of my works on electricity, and stated that, on this principle, the entire range of the "great metropolis" might be ignited in the twinkling of an eye; still better, on the immensity of Bunsen's battery, by the ignition of links of platinum at

the orifice of each jet—the connecting wires being otherwise of copper. The platinum will not waste by contact with flame. A more elegant way of lighting the gas in both Houses of Parliament, on railway lines, and in chapels and other public buildings, it were difficult to conceive. The period, I have no doubt, is fast approaching, when these simple means will be universally adopted.

JOHN MURRAY.

TALACRE COAL AND IRON COMPANY.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—Nearly nine months have elapsed, and yet no signs of partition. We have no prospects even of realising the old fable of "*Montes parturit nati*." No, Sir—"the earth hath bubbles, and this is one of them." What a farce, indeed, was it ever to suppose that a Court of Aldermen would decree one of their own cloth; it is really beyond the confines of common sense to suppose that they could strip the cloak from off the shoulders of a reverend brother alderman. Gog and Magog forbid that ever the civic wisdom of London should so debase itself as to exhibit, in all their deformity, the vices which are now shrouded by the magisterial mantle. No, Sir—you have mistaken your men. Dip your pen into gall, if you will; but let not its point be directed at the good and great, who preside over our civic feasts, and whose learned lore (*law*) is so fully developed in our civic courts.

Such, I can well imagine, is the language in which some of the aspirants to the civic chair would indulge, were they to express their indignant feelings at the course you have pursued, in unmasking hypocrisy, and tearing off the veil of deception, which hid from the public eye the abuses practised by one of the members of the court; but, as I have no fallow feeling in this instance, I shall, with your permission, briefly remark on the unaccountable and mysterious silence manifested in this inquiry (?) It was avowed, at the time of election of Lord Mayor, on last Midsummer's day, that the grounds on which Mr. Ald. Thomas Wood was rejected, were the charges preferred against him for the part he had taken in the affair of the Talacre Company, upon which it does not require me to say anything on the present occasion. Subsequently, the legal alderman claimed an inquiry, and accordingly a committee was appointed; this committee, I believe, have had some two or three meetings, and have, in some measure, stultified themselves by their acts, while their silence is to me mysterious, as the period is now fast approaching when the livery will be called on to declare their choice of a chief magistrate for the ensuing year. If there be any unfair dealing, whether in favour or against Mr. Ald. Thomas Wood, it cannot be too severely deprecated. If he be innocent of the charges, let them not hang over his head—if he be guilty, let there be no concealment, nor any trick, at the last moment, whereby he may be placed in the chair, while the present charges remain, would be calculated only to reflect discredit and disgrace upon the city of London. In three short months, we shall be again called upon to declare our opinion as to the most fit and proper person to preside as chief magistrate over a commercial community, whose pride should be to honour those who are virtuous, and to reject those tainted with vice. I trust, therefore, that the Court of Aldermen will consider the position in which they are placed, and not, from false motives, do an injustice to the citizens of London, by concealing abuses, if found to exist, or avoiding exposure of the parties, although they may even be part and parcel of themselves.

A LIVERMAN.

City Club, March 24.

[We are really so tired of the subject, that we were half inclined to refuse insertion to the letter of our correspondent; but, as it may have the effect of awakening the dormant faculties of the civic administration, we trust that such may be the result, and that the Court of Aldermen will, at least, do their duty.]

CORNISH MINES—TINCROFT AND WEST WHEEL JEWEL.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—Knowing you to be an advocate of fair play, and an enemy to "jobbing," induces me to hope you will publish, in your widely-circulated Journal, the contents of this letter, as it may prove a beacon to the unwary and unsuspecting, who are daily purchasing shares in several mines in this part of the county, at far more than twice their actual value. Most persons in this neighbourhood have been astonished to find the shares in Tincroft, quoted week after week, higher and still higher, in the face of there being no decided improvement in the prospects of the mine since the shares were selling at 7s. each. This mine is now in the market at the high figure of 96,000s. Would any man on earth give 1000s. for a 96th share of this mine, provided he were to be bound down not to sell it for two years? I think no man in this county would give more than 250s. for such a share; this bubble has been got up in London, and the forcing up of shares in this way has a direct tendency to injure the mining interest of this county. Many have, no doubt, purchased shares in this mine, on account of its lately having been shown up in print that 1000s. profit were made in one month; nothing was said at the time of its being very unlikely that as much would be made for the next three months; the fact of the case is, Tincroft is a promising mine, but is not capable of making a profit of more than 1s. per share per annum. The holders of shares in this county have been astounded at the price which have been offered, and sold their interest to a man; they, however, have had nothing to do with the forcing up system in this instance—parties in London alone are to blame. If persons will take for granted what honorable secretaries and jobbing brokers (who are themselves largely interested) tell them, they should blame them, and then only, if they find hereafter they have been taken in.

I should have said before, that one "pair of men" cut a "bunch" of ore in a "pitch" at this mine, and rose 1700s. worth of ore, most of it in six weeks—hence the 1000s. profit in one month; this ore is gone to market; and, I repeat, that this mine is hardly capable of paying 1s. per share per annum, nor likely to do more at any future period. West Wheel Jewel shares are far too high also—Where are the dividends? Was this mine divided into 100 shares only, no man acquainted with mining would give more than 300s. for one share; but people purchase shares now-a-days, not with a view of holding them, but with a view of selling them in the course of a week at a profit. My only object in writing this is to put the unsuspecting on their guard against jobbers.

A LOVER OF FAIR PLAY.

Conclude, Cornwall, March 18.

[We give the letter of our correspondent, merely observing, that the returns for the past nine months are now before us, which are of a satisfactory nature, as regards the increased profit. We shall be glad, at all times, to make any exposure of misstatements put before the public; but, from private advice, we are induced to believe, that the prospects of the mine, from late discoveries, are fully equal to the representations. What may be the value of shares it is not for us to determine.]

BOTALLACK MINE.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—I beg to hand you the statement of Botallack Mine account, held this day. The appearances of this mine are decidedly good. I perceive, in your paper, a certain mine, in the eastern part of this county, quoted at eleven years' purchase, according to the dividends which have been made for the past twelve months, and Botallack at only four years' purchase, when, I have no doubt, the latter mine has ore ground discovered that will hold to work, and make the present profits, for as long a period as the former. I simply mention this, to show how very inferior capitalists are in laying out their property in speculations—time only will show, and bring the prices of such mines to their proper level.

A MINE ADVENTURER.

Botallack Mine Coal for Nov. and Dec., 1842.—Account held March 21, 1843.

To wages for November and December..... £1148 1 6
Merchants' bills, &c. 800 12 11

Cd. Balance in partner's hand last account..... £251 5 1

Copper ore raised in November and December, and sold 25th Dec. and 12th Jan. £505 15 4

Doos 529 1 9

The said (overings) £4 9 0

Doos 0 0 4

Divided £251 16 7

Balance in partner's hand £251 16 7

[Our correspondent will excuse us for having omitted certain portions of his letter; our object is to furnish information, from whatever source we may acquire it, but we cannot lend our columns to anything in the shape of a puff. The accounts best speak for themselves; a profit of 200 per cent. is no trifling amount at the time that it affords additional evidence of the improving value of mining property.]

MINE ACCIDENTS.

St. George's Colliery, Llanelli.—William Thomas was killed by the falling of a large stone from the top of the works, a short time since.

Berrington Main.—On the 15th inst., a lad named John Thompson, in descending the shaft, was thrown out by the jerk of the cage and killed.

Blowry Lead Mines, Midleton Treadle.—Mr. F. Williams, agent, was overlooking a blasting operation, which, suddenly exploding, caused him most severe injuries, but hopes are entertained of his recovery.

Pennsylvania Iron Works.—John Ford was killed by a fall of earth in this level when he was at work on the 15th inst., and shortly afterwards David Davies lost his death in a similar manner in another level.

Cyfarfyllfa Iron Works.—Five colliers were greatly injured in these works by the explosion of fuel air; all are, however, likely to recover.

Chum, St. Just.—John Gillys was killed on the 15th inst., while at work with his son in a quarry, by a quantity of earth falling upon him.

MINING CORRESPONDENCE.

ENGLISH MINES.

BOLMOUTH MINING COMPANY.

March 20.—In the 110 fathom level, west of Wall's shaft, the lode is about eight inches wide, and worth 3s. per fathom. In the 100 fathom level west the lode is about fourteen inches wide, and worth 9s. per fathom. In the 90 fathom level under this level the lode is twelve inches wide, and worth 10s. per fathom. In the 80 fathom level, east of Wall's shaft, the lode is small and poor; the ground in the cross-cut, towards the Flagjack lode, is much as last reported—rather hard for driving. The lode in the stopes, in the back of the 100 fathom level, is eighteen inches wide, and worth 35s. per fathom. The eighty and ninety fathom levels, west of Hitchins's shaft, are still progressing towards the lode. In the back of the ninety fathom level the lode in the eastern stope is twenty inches wide, and worth 38s. per fathom; in the middle stope the lode is twenty inches wide, and worth 40s. per fathom; and in the western stope the lode is two feet wide, and worth 50s. per fathom. In the eighty fathom level east the lode is ten inches wide, unproductive; in the cross-cut, towards the north lode, the ground is favourable for driving; the lode in the stopes, in the back of ditto, is sixteen inches wide, and worth 35s. per fathom. In the seventy fathom level, west of Hitchins's shaft, the lode is about nine inches wide, producing stoves of ore. In the sixty two fathom level, east of Bray's shaft, the lode is small and poor; ditto, west of Hitchins's shaft, the lode is about seven inches wide, producing a little ore. In the deep adit, east of Lady Fleam shaft, the lode is sixteen inches wide, composed of capel, spar, and muddle. The pitches are without alteration.

T. RICHARDS.

BEDFORD UNITED MINING COMPANY.

March 21.—At Whal Marquis, in the old mine west, during the past week, very little has been done in the upper part of the workings, owing to a breakage in the engine-shaft of the pitwork, which, however, are now being gradually repaired, and in such a manner as to prevent such an occurrence in future. In the new engine-shaft we have been engaged during the week in cutting a pit, putting in post-house and cistern, previous to the sinking of another lift, which will be commenced to-morrow; as also the driving of a ten fathom level east on the lode. Our wheel-machinery and pitwork answer extremely well. The lode in the pit looks very promising, being three feet wide, with an abundance of fine gossan and muddle, intermixed with rich stones of black ore. Our tribute pitches are looking well. We sampled in three weeks about thirty-five tons of ore, of tolerably good quality.

J. PHILLIPS.

WEST WHEAL JEWEL MINING ASSOCIATION.

March 20.—The ground in the eighty-five cross-cut is still favourable for driving. At the seventy east, on the south branch, the lode is worth 8s. per fathom; ditto east, on Wheel Jewel lode, is worth 20s. per fathom; the stopes in the back of this level are not working for the present—when suspended they were worth 25s. per fathom; ditto west, on Wheel Jewel lode, is two feet wide, and worth 15s. per fathom; the seventy cross-cut is in a favourable ground, and we expect to cut the new lode in about a month from this time. The thirty-seven east, on Wheel Jewel lode, is worth 15s. per fathom, and the forty-two east, on the same lode, is also worth 15s. per fathom.

STEPHEN LEAN.

TINCROFT MINING COMPANY.

March 20.—The lode in the new engine-shaft continues about the same size and quality as stated in my last, worth 25s. per fathom. The lode in the sixty end west is twenty inches wide, worth 30s. per fathom; the east end, same level, is passing through the cross-course. The lode in the fifty end east is twelve inches wide, producing a small quantity of ore; the lode in the fifty end west is two feet wide, worth at least 30s. per fathom. The lode in the 40 fathom level, in the back of the fifty, is fifteen inches wide, worth 30s. per fathom. The stopes in the back of fifty and sixty fathom levels are worth 25s. per fathom each. The forty west is at present unproductive. The thirty end, in the west of North Tincroft shaft, continues to be worth 7s. per fathom. Our pitches in this part of the mine remain stationary. Palmer's shaft is still being sunk in ironstone. The lode in the fifty-five west is increasing in size, and is more promising; the same may be said with respect to the mine sinking under the fifty-five. At the south mine the eighty-one end is being driven west on south part of Highbarrow south lode; that part of the lode is worth 10s. or 12s. per fathom, leaving a large piece of lode standing, which will be taken down to much greater advantage by-and-by. The rise in the back of the seventy-two is also worth 10s. or 12s. per fathom, with a large piece of lode left to stand, as at the eighty-one, the softest part of the lode being taken away first. Our tributaries are working with spirit, and getting fair wages at their different tributes.

W. PAUL.

TREGLAN MINING COMPANY.

March 21.—I have been underground at Tregran this day, and have, according to orders, suspended all the operations, except the sixty-two fathom level, and one man cutting through the lode at the fifty fathom level. I should like to drive a few fathoms in the fifty fathom level by two men, but shall not do so unless by your orders. The stope in the bottom of the sixty-two fathom level have been discontinued some time since; the ore does not hold down. I would advise to set a pitch there; and if that cannot be obtained which will make a profit, it will be useless to set a pitch. The sixty-two fathom level, driving east, is very poor; the workmen will drive this end, because a pair of workmen must be kept while the engine is kept working; but the sixty-two fathom level is not so promising as when I reported, neither is the bottom of that level. I have set one pitch this day in the back of the fifty fathom level, at 7s. in the post, and shall endeavour to set more pitches where any profit can be obtained. I would also recommend to have a surface pitch set on the halvans; it would increase the quantity of ore; and I shall endeavour to have more ore returned from the stamps, which I think can be done. Your next another month will considerably shake; there will not be much timber wanted, neither will the whim drawing with iron-work be heavy, and the tributaries must pay their own drawing.

H. WILLIAMS.

TARBISH CONSOLE MINING COMPANY.

March 18.—The eighty, east of Christie, is two feet wide, producing good stones of ore, and is a kindly lode; at the eighty west we are cross-cutting in search of more lode. The sixty west is very large, worth 6s. per fathom, and promising to improve. The fifty west is eighteen inches wide, and producing some ore. At Good Fortune the fifty west is three feet wide, with some good ore. The forty-four is kindly, but not much ore. The thirty-four west is three feet wide, and producing one ton of ore per fathom.

W. SYMONS.

CONSOLIDATED TREMOL MINING COMPANY.

March 20.—We have finished making and dividing Henwood's shaft, and have just begun to drive east and west of the fifty fathom level. The lode in the forty fathom level, east of Williams's shaft, is sixteen inches wide—good tribute ground. The lode in the forty fathom level, west of Henwood's shaft, is eight inches wide—tribute ground; ditto, east of Henwood's shaft, is one foot wide—good tribute ground. The Blind Will's lode, at the adit level, west of Henwood's shaft, is one foot wide—unproductive. The tin lode in the back of the adit level, east of Henwood's shaft, is much as last reported. We have sampled this day 100 tons of ore.

H. WILLIAMS. J. MORCOM.

UNITED MILLER MINING COMPANY.

March 21.—At the seventy fathom level the lode in the eastern end is four and a half feet wide, two and a half feet ore of fair quality; in the western end the lode is three feet wide, with stoves of ore. At the sixty fathom level the lode in the eastern end is four feet wide, but coarse in quality; at the western end the lode is three and a half feet wide, fifteen inches on the north part good ore. At the fifty fathom level the lode is three feet wide, and good ore. At James's shaft the lode is four feet wide, very thorough, and of average quality. At the forty fathom level the lode is two feet wide, producing some ore, with a promising appearance. At Wood Sparrow twenty fathom level the lode is two and a half feet wide, eighteen inches on the north part producing ore. At the adit level the lode is 1 ft. 6 in. wide, producing but little ore.

R. H. FRANK.

TANAR SILVER-LEAD MINING COMPANY.

March 20.—In the 130 fathom level the lode is from eighteen inches to two feet in width, producing rich work. In the 110 fathom level the lode is eighteen inches wide, producing good work. In the 100 fathom level the lode is two feet in width, composed chiefly of blue spar, intermixed with silver-lead ore. In the ninety-five fathom level the lode is one foot wide, carrying a leader of rich ore. In the eighty-five fathom level the lode is six inches wide, producing a small quantity of ore. In the seventy-five level the lode is two feet wide, very ore and promising. In the sixty-five fathom level the lode is one foot wide, producing ore. In the fifty-five fathom level the lode is two feet in width, carrying work. In the forty-five fathom level the lode is two feet in width, carrying a branch of ore. In the thirty-five fathom level the lode is from two to three feet wide, composed of capel, blue spar, and ore. At the North Mine, we have cut the lode at the thirty fathom level somewhat more than we expected, by its underlying factor east then west; it is about eighteen inches in width, composed of blue spar, capel, and some good work for silver-lead ore; and every appearance of being productive.

J. SWANSON.

CHURCHMAN MINING COMPANY.

March 20.—The north lode in the seventy fathom level, driving west of engine-shaft, is two and a half feet wide, chiefly composed of blue spar. The sixty fathom level west has a very promising appearance; the lode is three feet wide, one foot and a half spring work. We consider it is getting near the end of our ground we have been in expectation of the old time. Henwood's shaft is sunk about 50 fathoms below the fifty fathom level; the lode is two feet wide, producing some good work. The tribute department is looking well; the favourable change during the past week has increased our expectations.

J. WARD.

